



SEQUENCE LISTING

<110> Carr, Antony M.

<120> Cell-Cycle Checkpoint Genes

<130> 27866/34132

<140> 09/029,047

<141> 1999-05-11

<150> PCT/GB96/02197

<151> 1996-09-06

<150> GB 9518220.0

<151> 1995-09-06

<160> 14

<170> PatentIn Ver. 3.1

<210> 1

<211> 8239

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (80)..(8011)

<400> 1

```
gcgctcttcc ggcagcggtg cgtttggaga cgccgggaac ccgcgttggc gtggttgact 60
agtgcctcgc agcctcagc atg ggg gaa cat ggc ctg gag ctg gct tcc atg 112
          Met Gly Glu His Gly Leu Glu Leu Ala Ser Met
          1          5          10
atc ccc gcc ctg cgg gag ctg ggc agt gcc aca cca gag gaa tat aat 160
Ile Pro Ala Leu Arg Glu Leu Gly Ser Ala Thr Pro Glu Glu Tyr Asn
          15          20          25
aca gtt gta cag aag cca aga caa att ctg tgt caa ttc att gac cgg 208
Thr Val Val Gln Lys Pro Arg Gln Ile Leu Cys Gln Phe Ile Asp Arg
          30          35          40
ata ctt aca gat gta aat gtt gtt gct gta gaa ctt gta aag aaa act 256
Ile Leu Thr Asp Val Asn Val Val Ala Val Glu Leu Val Lys Lys Thr
          45          50          55
gac tct cag cca acc tcc gtg atg ttg ctt gat ttc atc cag cat atc 304
Asp Ser Gln Pro Thr Ser Val Met Leu Leu Asp Phe Ile Gln His Ile
          60          65          70          75
atg aaa tcc tcc cca ctt atg ttt gta aat gtg agt gga agc cat gag 352
Met Lys Ser Ser Pro Leu Met Phe Val Asn Val Ser Gly Ser His Glu
          80          85          90
cgc aaa ggc agt tgt att gaa ttc agt aat tgg atc ata acg aga ctt 400
Arg Lys Gly Ser Cys Ile Glu Phe Ser Asn Trp Ile Ile Thr Arg Leu
          95          100          105
```

ctg	cgg	att	gca	gca	act	ccc	tcc	tgt	cat	ttg	tta	cac	aag	aaa	atc	448
Leu	Arg	Ile	Ala	Ala	Thr	Pro	Ser	Cys	His	Leu	Leu	His	Lys	Lys	Ile	
		110						115				120				
tgt	gaa	gtc	atc	tgt	tca	tta	tta	ttt	ctt	ttt	aaa	agc	aag	agt	cct	496
Cys	Glu	Val	Ile	Cys	Ser	Leu	Leu	Phe	Leu	Phe	Lys	Ser	Lys	Ser	Pro	
	125					130					135					
gct	att	ttt	ggg	gta	ctc	aca	aaa	gaa	tta	tta	caa	ctt	ttt	gaa	gac	544
Ala	Ile	Phe	Gly	Val	Leu	Thr	Lys	Glu	Leu	Leu	Gln	Leu	Phe	Glu	Asp	
140					145					150				155		
ttg	gtt	tac	ctc	cat	aga	aga	aat	gtg	atg	ggg	cat	gct	gtg	gaa	tgg	592
Leu	Val	Tyr	Leu	His	Arg	Arg	Asn	Val	Met	Gly	His	Ala	Val	Glu	Trp	
				160				165						170		
cca	gtg	gtc	atg	agc	cga	ttt	tta	agt	caa	tta	gat	gaa	cac	atg	gga	640
Pro	Val	Val	Met	Ser	Arg	Phe	Leu	Ser	Gln	Leu	Asp	Glu	His	Met	Gly	
			175					180						185		
tat	tta	caa	tca	gct	cct	ttg	cag	ttg	atg	agt	atg	caa	aat	tta	gaa	688
Tyr	Leu	Gln	Ser	Ala	Pro	Leu	Gln	Leu	Met	Ser	Met	Gln	Asn	Leu	Glu	
	190					195						200				
ttt	att	gaa	gtc	act	tta	tta	atg	gtt	ctt	act	cgt	att	att	gca	att	736
Phe	Ile	Glu	Val	Thr	Leu	Leu	Met	Val	Leu	Thr	Arg	Ile	Ile	Ala	Ile	
	205				210						215					
gtg	ttt	ttt	aga	agg	caa	gaa	ctc	tta	ctt	tgg	cag	ata	ggg	tgt	gtt	784
Val	Phe	Phe	Arg	Arg	Gln	Glu	Leu	Leu	Leu	Trp	Gln	Ile	Gly	Cys	Val	
220					225					230				235		
ctg	cta	gag	tat	ggg	agt	cca	aaa	att	aaa	tcc	cta	gca	att	agc	ttt	832
Leu	Leu	Glu	Tyr	Gly	Ser	Pro	Lys	Ile	Lys	Ser	Leu	Ala	Ile	Ser	Phe	
				240					245					250		
tta	aca	gaa	ctt	ttt	cag	ctt	gga	gga	cta	cca	gca	caa	cca	gct	agc	880
Leu	Thr	Glu	Leu	Phe	Gln	Leu	Gly	Gly	Leu	Pro	Ala	Gln	Pro	Ala	Ser	
			255				260						265			
act	ttt	ttc	agc	tca	ttt	ttg	gaa	tta	aaa	cac	ctt	gta	gaa	atg		928
Thr	Phe	Phe	Ser	Ser	Phe	Leu	Glu	Leu	Leu	Lys	His	Leu	Val	Glu	Met	
		270				275						280				
gat	act	gac	caa	ttg	aaa	ctc	tat	gaa	gag	cca	tta	tca	aag	ctg	ata	976
Asp	Thr	Asp	Gln	Leu	Lys	Leu	Tyr	Glu	Glu	Pro	Leu	Ser	Lys	Leu	Ile	
	285				290					295						
aag	aca	cta	ttt	ccc	ttt	gaa	gca	gaa	gct	tat	aga	aat	att	gaa	cct	1024
Lys	Thr	Leu	Phe	Pro	Phe	Glu	Ala	Glu	Ala	Tyr	Arg	Asn	Ile	Glu	Pro	
300					305					310				315		
gtc	tat	tta	aat	atg	ctg	ctg	gaa	aaa	ctc	tgt	gtc	atg	ttt	gaa	gac	1072
Val	Tyr	Leu	Asn	Met	Leu	Leu	Glu	Lys	Leu	Cys	Val	Met	Phe	Glu	Asp	
				320					325					330		
ggg	gtg	ctc	atg	cgg	ctt	aag	tct	gat	ttg	cta	aaa	gca	gct	ttg	tgc	1120
Gly	Val	Leu	Met	Arg	Leu	Lys	Ser	Asp	Leu	Leu	Lys	Ala	Ala	Leu	Cys	
			335					340					345			
cat	tta	ctg	cag	tat	ttc	ctt	aaa	ttt	gtg	cca	gct	ggg	tat	gaa	tct	1168
His	Leu	Leu	Gln	Tyr	Phe	Leu	Lys	Phe	Val	Pro	Ala	Gly	Tyr	Glu	Ser	
		350				355						360				
gct	tta	caa	gtc	agg	aag	gtc	tat	gtg	aga	aat	att	tgt	aaa	gct	ctt	1216
Ala	Leu	Gln	Val	Arg	Lys	Val	Tyr	Val	Arg	Asn	Ile	Cys	Lys	Ala	Leu	
	365					370					375					
ttg	gat	gtg	ctt	gga	att	gag	gta	gat	gca	gag	tac	ttg	ttg	ggc	cca	1264
Leu	Asp	Val	Leu	Gly	Ile	Glu	Val	Asp	Ala	Glu	Tyr	Leu	Leu	Gly	Pro	
380					385					390				395		
ctt	tat	gca	gct	ttg	aaa	atg	gaa	agt	atg	gaa	atc	att	gag	gag	att	1312
Leu	Tyr	Ala	Ala	Leu	Lys	Met	Glu	Ser	Met	Glu	Ile	Ile	Glu	Glu	Ile	
				400					405					410		
caa	tgc	caa	act	caa	cag	gaa	aac	ctc	agc	agt	aat	agt	gat	gga	ata	1360
Gln	Cys	Gln	Thr	Gln	Gln	Glu	Asn	Leu	Ser	Ser	Asn	Ser	Asp	Gly	Ile	
			415					420					425			
tca	ccc	aaa	agg	cgt	cgt	ctc	agc	tcg	tct	cta	aac	cct	tct	aaa	aga	1408
Ser	Pro	Lys	Arg	Arg	Arg	Leu	Ser	Ser	Ser	Leu	Asn	Pro	Ser	Lys	Arg	
		430				435						440				

gca cca aaa cag act gag gaa att aaa cat gtg gac atg aac caa aag	1456
Ala Pro Lys Gln Thr Glu Glu Ile Lys His Val Asp Met Asn Gln Lys	
445 450 455	
agc ata tta tgg agt gca ctg aaa cag aaa gct gaa tcc ctt cag att	1504
Ser Ile Leu Trp Ser Ala Leu Lys Gln Lys Ala Glu Ser Leu Gln Ile	
460 465 470 475	
tcc ctt gaa tac agt ggc cta aag aat cct gtt att gag atg tta gaa	1552
Ser Leu Glu Tyr Ser Gly Leu Lys Asn Pro Val Ile Glu Met Leu Glu	
480 485 490	
gga att gct gtt gtc tta caa ctg act gct ctg tgt act gtt cat tgt	1600
Gly Ile Ala Val Val Leu Gln Leu Thr Ala Leu Cys Thr Val His Cys	
495 500 505	
tct cat caa aac atg aac tgc cgt act ttc aag gac tgt caa cat aaa	1648
Ser His Gln Asn Met Asn Cys Arg Thr Phe Lys Asp Cys Gln His Lys	
510 515 520	
tcc aag aag aaa cct tct gta gtg ata act tgg atg tca ttg gat ttt	1696
Ser Lys Lys Lys Pro Ser Val Val Ile Thr Trp Met Ser Leu Asp Phe	
525 530 535	
tac aca aaa gtg ctt aag agc tgt aga agt ttg tta gaa tct gtt cag	1744
Tyr Thr Lys Val Leu Ser Cys Arg Ser Leu Leu Glu Ser Val Gln	
540 545 550 555	
aaa ctg gac ctg gag gca acc att gat aag gtg gtg aaa att tat gat	1792
Lys Leu Asp Leu Glu Ala Thr Ile Asp Lys Val Val Lys Ile Tyr Asp	
560 565 570	
gct ttg att tat atg caa gta aac agt tca ttt gaa gat cat atc ctg	1840
Ala Leu Ile Tyr Met Gln Val Asn Ser Phe Glu Asp His Ile Leu	
575 580 585	
gaa gat tta tgt ggt atg ctc tca ctt cca tgg att tat tcc cat tct	1888
Glu Asp Leu Cys Gly Met Leu Ser Leu Pro Trp Ile Tyr Ser His Ser	
590 595 600	
gat gat ggc tgt tta aag ttg acc aca ttt gcc gct aat ctt cta aca	1936
Asp Asp Gly Cys Leu Lys Leu Thr Thr Phe Ala Ala Asn Leu Leu Thr	
605 610 615	
tta agc tgt agg att tca gat agc tat tca cca cag gca caa tca cga	1984
Leu Ser Cys Arg Ile Ser Asp Ser Tyr Ser Pro Gln Ala Gln Ser Arg	
620 625 630 635	
tgt gtg ttt ctt ctg act ctg ttt cca aga ata ttc ctt gag tgg	2032
Cys Val Phe Leu Leu Thr Leu Phe Pro Arg Arg Ile Phe Leu Glu Trp	
640 645 650	
aga aca gca gtt tac aac tgg gcc ctg cag agc tcc cat gaa gta atc	2080
Arg Thr Ala Val Tyr Asn Trp Ala Leu Gln Ser Ser His Glu Val Ile	
655 660 665	
cgg gct agt tgt gtt agt gga ttt ttt atc tta ttg cag cag cag aat	2128
Arg Ala Ser Cys Val Ser Gly Phe Phe Ile Leu Leu Gln Gln Gln Asn	
670 675 680	
tct tgt aac aga gtt ccc aag att ctt ata gat aaa gtc aaa gat gat	2176
Ser Cys Asn Arg Val Pro Lys Ile Leu Ile Asp Lys Val Lys Asp Asp	
685 690 695	
tct gac att gtc aag aaa gaa ttt gct tct ata ctt ggt caa ctt gtc	2224
Ser Asp Ile Val Lys Lys Glu Phe Ala Ser Ile Leu Gly Gln Leu Val	
700 705 710 715	
tgt act ctt cac ggc atg ttt tat ctg aca agt tct tta aca gaa cct	2272
Cys Thr Leu His Gly Met Phe Tyr Leu Thr Ser Ser Leu Thr Glu Pro	
720 725 730	
ttc tct gaa cac gga cat gtg gac ctc ttc tgt agg aac ttg aaa gcc	2320
Phe Ser Glu His Gly His Val Asp Leu Phe Cys Arg Asn Leu Lys Ala	
735 740 745	
act tct caa cat gaa tgt tca tct tct caa cta aaa gct tct gtc tgc	2368
Thr Ser Gln His Glu Cys Ser Ser Ser Gln Leu Lys Ala Ser Val Cys	
750 755 760	
aag cca ttc ctt ttc cta ctg aaa aaa aaa ata cct agt cca gta aaa	2416
Lys Pro Phe Leu Phe Leu Leu Lys Lys Lys Ile Pro Ser Pro Val Lys	
765 770 775	

ctt gct ttc ata gat aat cta cat cat ctt tgt aag cat ctt gat ttt	2464
Leu Ala Phe Ile Asp Asn Leu His His Leu Cys Lys His Leu Asp Phe	
780 785 790 795	
aga gaa gat gaa aca gat gta aaa gca gtt ctt gga act tta tta aat	2512
Arg Glu Asp Glu Thr Asp Val Lys Ala Val Leu Gly Thr Leu Leu Asn	
800 805 810	
tta atg gaa gat cca gac aaa gat gtt aga gtg gct ttt agt gga aat	2560
Leu Met Glu Asp Pro Asp Lys Asp Val Arg Val Ala Phe Ser Gly Asn	
815 820 825	
atc aag cac ata ttg gaa tcc ttg gac tct gaa gat gga ttt ata aag	2608
Ile Lys His Ile Leu Glu Ser Leu Asp Ser Glu Asp Gly Phe Ile Lys	
830 835 840	
gag ctt ttt gtc tta aga atg aag gaa gca tat aca cat gcc caa ata	2656
Glu Leu Phe Val Leu Arg Met Lys Glu Ala Tyr Thr His Ala Gln Ile	
845 850 855	
tca aga aat aat gag ctg aag gat acc ttg att ctt aca aca ggg gat	2704
Ser Arg Asn Asn Glu Leu Lys Asp Thr Leu Ile Leu Thr Thr Gly Asp	
860 865 870 875	
att gga agg gcc gca aaa gga gat ttg gta cca ttt gca ctc tta cac	2752
Ile Gly Arg Ala Lys Gly Asp Leu Val Pro Phe Ala Leu Leu His	
880 885 890	
tta ttg cat tgt ttg tta tcc aag tca gca tct gtc tct gga gca gca	2800
Leu Leu His Cys Leu Leu Ser Lys Ser Ala Ser Val Ser Gly Ala Ala	
895 900 905	
tac aca gaa att aga gct ctg gtt gca gct aaa agt gtt aaa ctg caa	2848
Tyr Thr Glu Ile Arg Ala Leu Val Ala Ala Lys Ser Val Lys Leu Gln	
910 915 920	
agt ttt ttc agc cag tat aag aaa ccc atc tgt cag ttt ttg gta gaa	2896
Ser Phe Phe Ser Gln Tyr Lys Lys Pro Ile Cys Gln Phe Leu Val Glu	
925 930 935	
tcc ctt cac tct agt cag atg aca gca ctt ccg aat act cca tgc cag	2944
Ser Leu His Ser Ser Gln Met Thr Ala Leu Pro Asn Thr Pro Cys Gln	
940 945 950 955	
aat gct gac gtg cga aaa caa gat gtg gct cac cag aga gaa atg gct	2992
Asn Ala Asp Val Arg Lys Gln Asp Val Ala His Gln Arg Glu Met Ala	
960 965 970	
tta aat acg ttg tct gaa att gcc aac gtt ttc gac ttt cct gat ctt	3040
Leu Asn Thr Leu Ser Glu Ile Ala Asn Val Phe Asp Phe Pro Asp Leu	
975 980 985	
aat cgt ttt ctt act agg aca tta caa gtt cta cta cct gat ctt gct	3088
Asn Arg Phe Leu Thr Arg Thr Leu Gln Val Leu Leu Pro Asp Leu Ala	
990 995 1000	
gcc aaa gca agc cct gca gct tct gct ctc att cga act tta gga aaa	3136
Ala Lys Ala Ser Pro Ala Ala Ser Ala Leu Ile Arg Thr Leu Gly Lys	
1005 1010 1015	
caa tta aat gtc aat cgt aga gag att tta ata aac aac ttc aaa tat	3184
Gln Leu Asn Val Asn Arg Arg Glu Ile Leu Ile Asn Asn Phe Lys Tyr	
1020 1025 1030 1035	
att ttt tct cat ttg gtc tgt tct tgt tcc aaa gat gaa tta gaa cgt	3232
Ile Phe Ser His Leu Val Cys Ser Cys Ser Lys Asp Glu Leu Glu Arg	
1040 1045 1050	
gcc ctt cat tat ctg aag aat gaa aca gaa att gaa ctg ggg agc ctg	3280
Ala Leu His Tyr Leu Lys Asn Glu Thr Glu Ile Glu Leu Gly Ser Leu	
1055 1060 1065	
ttg aga caa gat ttc caa gga ttg cat aat gaa tta ttg ctg cgt att	3328
Leu Arg Gln Asp Phe Gln Gly Leu His Asn Glu Leu Leu Leu Arg Ile	
1070 1075 1080	
gga gaa cac tat caa cag gtt ttt aat ggt ttg tca ata ctt gcc tca	3376
Gly Glu His Tyr Gln Gln Val Phe Asn Gly Leu Ser Ile Leu Ala Ser	
1085 1090 1095	
ttt gca tcc agt gat gat cca tat cag ggc ccg aga gat atc ata tca	3424
Phe Ala Ser Ser Asp Asp Pro Tyr Gln Gly Pro Arg Asp Ile Ile Ser	
1100 1105 1110 1115	

cct gaa ctg atg gct gat tat tta caa ccc aaa ttg ttg ggc att ttg	3472
Pro Glu Leu Met Ala Asp Tyr Leu Gln Pro Lys Leu Leu Gly Ile Leu	
1120 1125 1130	
gct ttt ttt aac atg cag tta ctg agc tct agt gtt ggc att gaa gat	3520
Ala Phe Phe Asn Met Gln Leu Leu Ser Ser Ser Val Gly Ile Glu Asp	
1135 1140 1145	
aag aaa atg gcc ttg aac agt ttg atg tct ttg atg aag tta atg gga	3568
Lys Lys Met Ala Leu Asn Ser Leu Met Ser Leu Met Lys Leu Met Gly	
1150 1155 1160	
ccc aaa cat gtc agt tct gtg agg gtg aag atg atg acc aca ctg aga	3616
Pro Lys His Val Ser Ser Val Arg Val Lys Met Met Thr Thr Leu Arg	
1165 1170 1175	
act ggc ctt cga ttc aag gat gat ttt cct gaa ttg tgt tgc aga gct	3664
Thr Gly Leu Arg Phe Lys Asp Asp Phe Pro Glu Leu Cys Cys Arg Ala	
1180 1185 1190 1195	
tgg gac tgc ttt gtt cgc tgc ctg gat cat gct tgt ctg ggc tcc ctt	3712
Trp Asp Cys Phe Val Arg Cys Leu Asp His Ala Cys Leu Gly Ser Leu	
1200 1205 1210	
ctc agt cat gta ata gta gct ttg tta cct ctt ata cac atc cag cct	3760
Leu Ser His Val Ile Val Ala Leu Leu Pro Leu Ile His Ile Gln Pro	
1215 1220 1225	
aaa gaa act gca gct atc ttc cac tac ctc ata att gaa aac agg gat	3808
Lys Glu Thr Ala Ala Ile Phe His Tyr Leu Ile Ile Glu Asn Arg Asp	
1230 1235 1240	
gct gtg caa gat ttt ctt cat gaa ata tat ttt tta cct gat cat cca	3856
Ala Val Gln Asp Phe Leu His Glu Ile Tyr Phe Leu Pro Asp His Pro	
1245 1250 1255	
gaa tta aaa aag ata aaa gcc gtt ctc cag gaa tac aga aag gag acc	3904
Glu Leu Lys Lys Ile Lys Ala Val Leu Gln Glu Tyr Arg Lys Glu Thr	
1260 1265 1270 1275	
tct gag agc act gat ctt cag aca act ctt cag ctc tct atg aag gcc	3952
Ser Glu Ser Thr Asp Leu Gln Thr Thr Leu Gln Leu Ser Met Lys Ala	
1280 1285 1290	
att caa cat gaa aat gtc gat gtt cgt att cat gct ctt aca agc ttg	4000
Ile Gln His Glu Asn Val Asp Val Arg Ile His Ala Leu Thr Ser Leu	
1295 1300 1305	
aag gaa acc ttg tat aaa aat cag gaa aaa ctg ata aag tat gca aca	4048
Lys Glu Thr Leu Tyr Lys Asn Gln Glu Lys Leu Ile Lys Tyr Ala Thr	
1310 1315 1320	
gac agt gaa aca gta gaa cct att atc tca cag ttg gtg aca gtg ctt	4096
Asp Ser Glu Thr Val Glu Pro Ile Ile Ser Gln Leu Val Thr Val Leu	
1325 1330 1335	
ttg aaa ggt tgc caa gat gca aac tct caa gct cgg ttg ctc tgt ggg	4144
Leu Lys Gly Cys Gln Asp Ala Asn Ser Gln Ala Arg Leu Leu Cys Gly	
1340 1345 1350 1355	
gaa tgt tta ggg gaa ttg ggg gcg ata gat cca ggt cga tta gat ttc	4192
Glu Cys Leu Gly Glu Leu Gly Ala Ile Asp Pro Gly Arg Leu Asp Phe	
1360 1365 1370	
tca aca act gaa act caa gga aaa gat ttt aca ttt gtg act gga gta	4240
Ser Thr Thr Glu Thr Gln Gly Lys Asp Phe Thr Phe Val Thr Gly Val	
1375 1380 1385	
gaa gat tca agc ttt gcc tat gga tta ttg atg gag cta aca aga gct	4288
Glu Asp Ser Ser Phe Ala Tyr Gly Leu Leu Met Glu Leu Thr Arg Ala	
1390 1395 1400	
tac ctt gcg tat gct gat aat agc cga gct caa gat tca gct gcc tat	4336
Tyr Leu Ala Tyr Ala Asp Asn Ser Arg Ala Gln Asp Ser Ala Ala Tyr	
1405 1410 1415	
gcc att cag gag ttg ctt tct att tat gac tgt aga gag atg gag acc	4384
Ala Ile Gln Glu Leu Leu Ser Ile Tyr Asp Cys Arg Glu Met Glu Thr	
1420 1425 1430 1435	
aac ggc cca ggt cac caa ttg tgg agg aga ttt cct gag cat gtt cgg	4432
Asn Gly Pro Gly His Gln Leu Trp Arg Arg Phe Pro Glu His Val Arg	
1440 1445 1450	

gaa ata cta gaa cct cat cta aat acc aga tac aag agt tct cag aag	4480
Glu Ile Leu Glu Pro His Leu Asn Thr Arg Tyr Lys Ser Ser Gln Lys	
1455 1460 1465	
tca acc gat tgg tct gga gta aag aag cca att tac tta agt aaa ttg	4528
Ser Thr Asp Trp Ser Gly Val Lys Lys Pro Ile Tyr Leu Ser Lys Leu	
1470 1475 1480	
ggt agt aac ttt gca gaa tgg tca gca tct tgg gca ggt tat ctt att	4576
Gly Ser Asn Phe Ala Glu Trp Ser Ala Ser Trp Ala Gly Tyr Leu Ile	
1485 1490 1495	
aca aag gtt cga cat gat ctt gcc agt aaa att ttc acc tgc tgt agc	4624
Thr Lys Val Arg His Asp Leu Ala Ser Lys Ile Phe Thr Cys Cys Ser	
1500 1505 1510 1515	
att atg atg aag cat gat ttc aaa gtg acc atc tat ctt ctt cca cat	4672
Ile Met Met Lys His Asp Phe Lys Val Thr Ile Tyr Leu Leu Pro His	
1520 1525 1530	
att ctg gtg tat gtc tta ctg ggt tgt aat caa gaa gat cag cag gag	4720
Ile Leu Val Tyr Val Leu Leu Gly Cys Asn Gln Glu Asp Gln Gln Glu	
1535 1540 1545	
gtt tat gca gaa att atg gca gtt cta aag cat gac gat cag cat acc	4768
Val Tyr Ala Glu Ile Met Ala Val Leu Lys His Asp Gln His Thr	
1550 1555 1560	
ata aat acc caa gac att gca tct gat ctg tgt caa ctc agt aca cag	4816
Ile Asn Thr Gln Asp Ile Ala Ser Asp Leu Cys Gln Leu Ser Thr Gln	
1565 1570 1575	
act gtg ttc tcc atg ctt gac cat ctc aca cag tgg gca agg cac aaa	4864
Thr Val Phe Ser Met Leu Asp His Leu Thr Gln Trp Ala Arg His Lys	
1580 1585 1590 1595	
ttt cag gca ctg aaa gct gag aaa tgt cca cac agc aaa tca aac aga	4912
Phe Gln Ala Leu Lys Ala Glu Lys Cys Pro His Ser Lys Ser Asn Arg	
1600 1605 1610	
aat aag gta gac tca atg gta tct act gtg gat tat gaa gac tat cag	4960
Asn Lys Val Asp Ser Met Val Ser Thr Val Asp Tyr Glu Asp Tyr Gln	
1615 1620 1625	
agt gta acc cgt ttt cta gac ctc ata ccc cag gat act ctg gca gta	5008
Ser Val Thr Arg Phe Leu Asp Leu Ile Pro Gln Asp Thr Leu Ala Val	
1630 1635 1640	
gct tcc ttt cgc tcc aaa gca tac aca cga gct gta atg cac ttt gaa	5056
Ala Ser Phe Arg Ser Lys Ala Tyr Thr Arg Ala Val Met His Phe Glu	
1645 1650 1655	
tca ttt att aca gaa aag aag caa aat att cag gaa cat ctt gga ttt	5104
Ser Phe Ile Thr Glu Lys Lys Gln Asn Ile Gln Glu His Leu Gly Phe	
1660 1665 1670 1675	
tta cag aaa ttg tat gct gct atg cat gaa cct gat gga gtg gcc gga	5152
Leu Gln Lys Leu Tyr Ala Ala Met His Glu Pro Asp Gly Val Ala Gly	
1680 1685 1690	
gtc agt gca att aga aag gca gaa cca tct cta aaa gaa cag atc ctt	5200
Val Ser Ala Ile Arg Lys Ala Glu Pro Ser Leu Lys Glu Gln Ile Leu	
1695 1700 1705	
gaa cat gaa agc ctt ggc ttg ctg agg gat gcc act gct tgt tat gac	5248
Glu His Glu Ser Leu Gly Leu Leu Arg Asp Ala Thr Ala Cys Tyr Asp	
1710 1715 1720	
agg gct att cag cta gaa cca gac cag atc att cat tat cat ggt gta	5296
Arg Ala Ile Gln Leu Glu Pro Asp Gln Ile Ile His Tyr His Gly Val	
1725 1730 1735	
gta aag tcc atg tta ggt ctt ggt cag ctg tct act gtt atc act cag	5344
Val Lys Ser Met Leu Gly Leu Gly Gln Leu Ser Thr Val Ile Thr Gln	
1740 1745 1750 1755	
gtg aat gga gtg cat gct aac agg tcc gag tgg aca gat gaa tta aac	5392
Val Asn Gly Val His Ala Asn Arg Ser Glu Trp Thr Asp Glu Leu Asn	
1760 1765 1770	
acg tac aga gtg gaa gca gct tgg aaa ttg tca cag tgg gat ttg gtg	5440
Thr Tyr Arg Val Glu Ala Ala Trp Lys Leu Ser Gln Trp Asp Leu Val	
1775 1780 1785	

gaa aac tat ttg gca gca gat gga aaa tct aca aca tgg agt gtc aga	5488
Glu Asn Tyr Leu Ala Ala Asp Gly Lys Ser Thr Thr Trp Ser Val Arg	
1790 1795 1800	
ctg gga cag cta tta tta tca gcc aaa aaa aga gat atc aca gct ttt	5536
Leu Gly Gln Leu Leu Leu Ser Ala Lys Lys Arg Asp Ile Thr Ala Phe	
1805 1810 1815	
tat gac tca ctg aaa cta gtg aga gca gaa caa att gta cct ctt tca	5584
Tyr Asp Ser Leu Lys Leu Val Arg Ala Glu Gln Ile Val Pro Leu Ser	
1820 1825 1830 1835	
gct gca agc ttt gaa aga ggc tcc tac caa cga gga tat gaa tat att	5632
Ala Ala Ser Phe Glu Arg Gly Ser Tyr Gln Arg Gly Tyr Glu Tyr Ile	
1840 1845 1850	
gtg aga ttg cac atg tta tgt gag ttg gag cat agc atc aaa cca ctt	5680
Val Arg Leu His Met Leu Cys Glu Leu Glu His Ser Ile Lys Pro Leu	
1855 1860 1865	
ttc cag cat tct cca ggt gac agt tct caa gaa gat tct cta aac tgg	5728
Phe Gln His Ser Pro Gly Asp Ser Ser Gln Glu Asp Ser Leu Asn Trp	
1870 1875 1880	
gta gct cga cta gaa atg acc cag aat tcc tac aga gcc aag gac cct	5776
Val Ala Arg Leu Glu Met Thr Gln Asn Ser Tyr Arg Ala Lys Asp Pro	
1885 1890 1895	
atc ctg gct ctc cgg agg gct tta cta agc ctc aac aaa aga cca gat	5824
Ile Leu Ala Leu Arg Arg Ala Leu Leu Ser Leu Asn Lys Arg Pro Asp	
1900 1905 1910 1915	
tac aat gaa atg gtt gga gaa tgc tgg ctg cag agt gcc agg gta gct	5872
Tyr Asn Glu Met Val Gly Glu Cys Trp Leu Gln Ser Ala Arg Val Ala	
1920 1925 1930	
aga aag gct ggt cac cac cag aca gcc tac aat gct ctc ctt aat gca	5920
Arg Lys Ala Gly His His Gln Thr Ala Tyr Asn Ala Leu Leu Asn Ala	
1935 1940 1945	
ggg gaa tca cga ctc gct gaa ctg tac gtg gaa agg gca aag tgg ctc	5968
Gly Glu Ser Arg Leu Ala Glu Leu Tyr Val Glu Arg Ala Lys Trp Leu	
1950 1955 1960	
tgg tcc aag ggt gat gtt cac cag gca cta att gtt ctt caa aaa ggt	6016
Trp Ser Lys Gly Asp Val His Gln Ala Leu Ile Val Leu Gln Lys Gly	
1965 1970 1975	
gtt gaa tta tgt ttt cct gaa aat gaa acc cca cct gag ggt aag aac	6064
Val Glu Leu Cys Phe Pro Glu Asn Glu Thr Pro Pro Glu Gly Lys Asn	
1980 1985 1990 1995	
atg tta atc cat ggt cga gct atg cta cta gtg ggc cga ttt atg gaa	6112
Met Leu Ile His Gly Arg Ala Met Leu Leu Val Gly Arg Phe Met Glu	
2000 2005 2010	
gaa aca gct aac ttt gaa agc aat gca att atg aaa aaa tat aag gat	6160
Glu Thr Ala Asn Phe Glu Ser Asn Ala Ile Met Lys Lys Tyr Lys Asp	
2015 2020 2025	
gtg acc gcg tgc ctg cca gaa tgg gag gat ggg cat ttt tac ctt gcc	6208
Val Thr Ala Cys Leu Pro Glu Trp Glu Asp Gly His Phe Tyr Leu Ala	
2030 2035 2040	
aag tac tat gac aaa ttg atg ccc atg gtc aca gac aac aaa atg gaa	6256
Lys Tyr Tyr Asp Lys Leu Met Pro Met Val Thr Asp Asn Lys Met Glu	
2045 2050 2055	
aag caa ggt gat ctc atc cgg tat ata gtt ctt cat ttt ggc aga tct	6304
Lys Gln Gly Asp Leu Ile Arg Tyr Ile Val Leu His Phe Gly Arg Ser	
2060 2065 2070 2075	
cta caa tat gga aat cag ttc ata tat cag tca atg cca cga atg tta	6352
Leu Gln Tyr Gly Asn Gln Phe Ile Tyr Gln Ser Met Pro Arg Met Leu	
2080 2085 2090	
act cta tgg ctt gat tat ggt aca aag gca tat gaa tgg gaa aaa gct	6400
Thr Leu Trp Leu Asp Tyr Gly Thr Lys Ala Tyr Glu Trp Glu Lys Ala	
2095 2100 2105	
ggc cgc tcc gat cgt gta caa atg agg aat gat ttg ggt aaa ata aac	6448
Gly Arg Ser Asp Arg Val Gln Met Arg Asn Asp Leu Gly Lys Ile Asn	
2110 2115 2120	

aag gtt atc aca gag cat aca aac tat tta gct cca tat caa ttt ttg	6496
Lys Val Ile Thr Glu His Thr Asn Tyr Leu Ala Pro Tyr Gln Phe Leu	
2125 2130 2135	
act gct ttt tca caa ttg atc tct cga att tgt cat tct cac gat gaa	6544
Thr Ala Phe Ser Gln Leu Ile Ser Arg Ile Cys His Ser His Asp Glu	
2140 2145 2150 2155	
ggt ttt gtt gtc ttg atg gaa ata ata gcc aaa gta ttt cta gcc tat	6592
Val Phe Val Val Leu Met Glu Ile Ile Ala Lys Val Phe Leu Ala Tyr	
2160 2165 2170	
cct caa caa gca atg tgg atg atg aca gct gtg tca aag tca tct tat	6640
Pro Gln Gln Ala Met Trp Met Met Thr Ala Val Ser Lys Ser Ser Tyr	
2175 2180 2185	
ccc atg cgt gtg aac aga tgc aag gaa atc ctc aat aaa gct att cat	6688
Pro Met Arg Val Asn Arg Cys Lys Glu Ile Leu Asn Lys Ala Ile His	
2190 2195 2200	
atg aaa aaa tcc tta gag aag ttt gtt gga gat gca act cgc cta aca	6736
Met Lys Lys Ser Leu Glu Lys Phe Val Gly Asp Ala Thr Arg Leu Thr	
2205 2210 2215	
gat aag ctt cta gaa ttg tgc aat aaa ccg gtt gat gga agt agt tcc	6784
Asp Lys Leu Leu Glu Leu Cys Asn Lys Pro Val Asp Gly Ser Ser Ser	
2220 2225 2230 2235	
aca tta agc atg agc act cat ttt aaa atg ctt aaa aag ctg gta gaa	6832
Thr Leu Ser Met Ser Thr His Phe Lys Met Leu Lys Lys Leu Val Glu	
2240 2245 2250	
gaa gca aca ttt agt gaa atc ctc att cct cta caa tca gtc atg ata	6880
Glu Ala Thr Phe Ser Glu Ile Leu Ile Pro Leu Gln Ser Val Met Ile	
2255 2260 2265	
cct aca ctt cca tca att ctg ggt acc cat gct aac cat gct agc cat	6928
Pro Thr Leu Pro Ser Ile Leu Gly Thr His Ala Asn His Ala Ser His	
2270 2275 2280	
gaa cca ttt cct gga cat tgg gcc tat att gca ggg ttt gat gat atg	6976
Glu Pro Phe Pro Gly His Trp Ala Tyr Ile Ala Gly Phe Asp Asp Met	
2285 2290 2295	
gtg gaa att ctt gct tct ctt cag aaa cca aag aag att tct tta aaa	7024
Val Glu Ile Leu Ala Ser Leu Gln Lys Pro Lys Lys Ile Ser Leu Lys	
2300 2305 2310 2315	
ggc tca gat gga aag ttc tac atc atg atg tgt aag cca aaa gat gac	7072
Gly Ser Asp Gly Lys Phe Tyr Ile Met Met Cys Lys Pro Lys Asp Asp	
2320 2325 2330	
ctg aga aag gat tgt aga cta atg gaa ttc aat tcc ttg att aat aag	7120
Leu Arg Lys Asp Cys Arg Leu Met Glu Phe Asn Ser Leu Ile Asn Lys	
2335 2340 2345	
tgc tta aga aaa gat gca gag tct cgt aga aga gaa ctt cat att cga	7168
Cys Leu Arg Lys Asp Ala Glu Ser Arg Arg Arg Glu Leu His Ile Arg	
2350 2355 2360	
aca tat gca gtt att cca cta aat gat gaa tgt ggg att att gaa tgg	7216
Thr Tyr Ala Val Ile Pro Leu Asn Asp Glu Cys Gly Ile Ile Glu Trp	
2365 2370 2375	
gtg aac aac act gct ggt ttg aga cct att ctg acc aaa cta tat aaa	7264
Val Asn Asn Thr Ala Gly Leu Arg Pro Ile Leu Thr Lys Leu Tyr Lys	
2380 2385 2390 2395	
gaa aag gga gtg tat atg aca gga aaa gaa ctt cgc cag tgt atg cta	7312
Glu Lys Gly Val Tyr Met Thr Gly Lys Glu Leu Arg Gln Cys Met Leu	
2400 2405 2410	
cca aag tca gca gct tta tct gaa aaa ctc aaa gta ttc cga gaa ttt	7360
Pro Lys Ser Ala Ala Leu Ser Glu Lys Leu Lys Val Phe Arg Glu Phe	
2415 2420 2425	
ctc ctg ccc agg cat cct cct att ttt cat gag tgg ttt ctg aga aca	7408
Leu Leu Pro Arg His Pro Pro Ile Phe His Glu Trp Phe Leu Arg Thr	
2430 2435 2440	
ttc cct gat cct aca tca tgg tac agt agt aga tca gct tac tgc cgt	7456
Phe Pro Asp Pro Thr Ser Trp Tyr Ser Ser Arg Ser Ala Tyr Cys Arg	
2445 2450 2455	

tcc act gca gta atg tca atg gtt ggt tat att ctg ggg ctt gga gac 7504
 Ser Thr Ala Val Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp 2475
 2460 2465 2470
 cgt cat ggt gaa aat att ctc ttt gat tct ttg act ggt gaa tgc gta 7552
 Arg His Gly Glu Asn Ile Leu Phe Asp Ser Leu Thr Gly Glu Cys Val 2490
 2480 2485
 cat gta gat ttc aat tgt ctt ttc aat aag gga gaa acc ttt gaa gtt 7600
 His Val Asp Phe Asn Cys Leu Phe Asn Lys Gly Glu Thr Phe Glu Val 2505
 2495 2500
 cca gaa att gtg cca ttt cgc ctg act cat aat atg gtt aat gga atg 7648
 Pro Glu Ile Val Pro Phe Arg Leu Thr His Asn Met Val Asn Gly Met 2520
 2510 2515
 ggt cct atg gga aca gag ggt ctt ttt cga aga gca tgt gaa gtt aca 7696
 Gly Pro Met Gly Thr Glu Gly Leu Phe Arg Arg Ala Cys Glu Val Thr 2535
 2525 2530
 atg agg ctg atg cgt gat cag cga gag cct tta atg agt gtc tta aag 7744
 Met Arg Leu Met Arg Asp Gln Arg Glu Pro Leu Met Ser Val Leu Lys 2555
 2540 2545 2550
 act ttt cta cat gat cct ctt gtg gaa tgg agt aaa cca gtg aaa ggg 7792
 Thr Phe Leu His Asp Pro Leu Val Glu Trp Ser Lys Pro Val Lys Gly 2570
 2560 2565
 cat tcc aaa gcg cca ctg aat gaa act gga gaa gtt gtc aat gaa aag 7840
 His Ser Lys Ala Pro Leu Asn Glu Thr Gly Glu Val Val Asn Glu Lys 2585
 2575 2580
 gcc aag acc cat gtt ctt gac att gag cag cga cta caa ggt gta atc 7888
 Ala Lys Thr His Val Leu Asp Ile Glu Gln Arg Leu Gln Gly Val Ile 2600
 2590 2595
 aag act cga aat aga gtg aca gga ctg ccg tta tct att gaa gga cat 7936
 Lys Thr Arg Asn Arg Val Thr Gly Leu Pro Leu Ser Ile Glu Gly His 2615
 2605 2610
 gtg cat tac ctt ata caa gaa gct act gat gaa aac tta cta tgc cag 7984
 Val His Tyr Leu Ile Gln Glu Ala Thr Asp Glu Asn Leu Leu Cys Gln 2635
 2620 2625 2630
 atg tat ctt ggt tgg act cca tat atg tgaaatgaaa ttatgtaaaa 8031
 Met Tyr Leu Gly Trp Thr Pro Tyr Met 2640
 gaatatgtta ataatactaaa agtaatgcat ttggtatgaa tctgtggttg tatctgttca 8091
 attctaaagt acaacataaaa tttacgttct cagcaactgt tatttctctc tgatcattaa 8151
 ttatatgtaa aataatatac attcagttat taagaaataa actgctttct taataaaaaaa 8211
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 8239

<210> 2
 <211> 2644
 <212> PRT
 <213> Homo sapiens

<400> 2

Met Gly Glu His Gly Leu Glu Leu Ala Ser Met Ile Pro Ala Leu Arg
 1 5 10 15
 Glu Leu Gly Ser Ala Thr Pro Glu Glu Tyr Asn Thr Val Val Gln Lys
 20 25 30
 Pro Arg Gln Ile Leu Cys Gln Phe Ile Asp Arg Ile Leu Thr Asp Val
 35 40 45
 Asn Val Val Ala Val Glu Leu Val Lys Lys Thr Asp Ser Gln Pro Thr
 50 55 60
 Ser Val Met Leu Leu Asp Phe Ile Gln His Ile Met Lys Ser Ser Pro
 65 70 75 80
 Leu Met Phe Val Asn Val Ser Gly Ser His Glu Arg Lys Gly Ser Cys
 85 90 95
 Ile Glu Phe Ser Asn Trp Ile Ile Thr Arg Leu Leu Arg Ile Ala Ala
 100 105 110

Thr	Pro	Ser	Cys	His	Leu	Leu	His	Lys	Lys	Ile	Cys	Glu	Val	Ile	Cys
		115					120					125			
Ser	Leu	Leu	Phe	Leu	Phe	Lys	Ser	Lys	Ser	Pro	Ala	Ile	Phe	Gly	Val
	130					135					140				
Leu	Thr	Lys	Glu	Leu	Leu	Gln	Leu	Phe	Glu	Asp	Leu	Val	Tyr	Leu	His
	145				150					155					160
Arg	Arg	Asn	Val	Met	Gly	His	Ala	Val	Glu	Trp	Pro	Val	Val	Met	Ser
				165					170					175	
Arg	Phe	Leu	Ser	Gln	Leu	Asp	Glu	His	Met	Gly	Tyr	Leu	Gln	Ser	Ala
			180					185					190		
Pro	Leu	Gln	Leu	Met	Ser	Met	Gln	Asn	Leu	Glu	Phe	Ile	Glu	Val	Thr
		195					200					205			
Leu	Leu	Met	Val	Leu	Thr	Arg	Ile	Ile	Ala	Ile	Val	Phe	Phe	Arg	Arg
	210					215					220				
Gln	Glu	Leu	Leu	Leu	Trp	Gln	Ile	Gly	Cys	Val	Leu	Leu	Glu	Tyr	Gly
	225				230					235					240
Ser	Pro	Lys	Ile	Lys	Ser	Leu	Ala	Ile	Ser	Phe	Leu	Thr	Glu	Leu	Phe
				245					250					255	
Gln	Leu	Gly	Gly	Leu	Pro	Ala	Gln	Pro	Ala	Ser	Thr	Phe	Phe	Ser	Ser
			260				265						270		
Phe	Leu	Glu	Leu	Leu	Lys	His	Leu	Val	Glu	Met	Asp	Thr	Asp	Gln	Leu
		275					280					285			
Lys	Leu	Tyr	Glu	Glu	Pro	Leu	Ser	Lys	Leu	Ile	Lys	Thr	Leu	Phe	Pro
	290					295					300				
Phe	Glu	Ala	Glu	Ala	Tyr	Arg	Asn	Ile	Glu	Pro	Val	Tyr	Leu	Asn	Met
	305				310					315					320
Leu	Leu	Glu	Lys	Leu	Cys	Val	Met	Phe	Glu	Asp	Gly	Val	Leu	Met	Arg
				325					330					335	
Leu	Lys	Ser	Asp	Leu	Leu	Lys	Ala	Ala	Leu	Cys	His	Leu	Leu	Gln	Tyr
			340					345					350		
Phe	Leu	Lys	Phe	Val	Pro	Ala	Gly	Tyr	Glu	Ser	Ala	Leu	Gln	Val	Arg
		355					360					365			
Lys	Val	Tyr	Val	Arg	Asn	Ile	Cys	Lys	Ala	Leu	Leu	Asp	Val	Leu	Gly
	370				375						380				
Ile	Glu	Val	Asp	Ala	Glu	Tyr	Leu	Leu	Gly	Pro	Leu	Tyr	Ala	Ala	Leu
	385				390					395					400
Lys	Met	Glu	Ser	Met	Glu	Ile	Ile	Glu	Glu	Ile	Gln	Cys	Gln	Thr	Gln
				405					410					415	
Gln	Glu	Asn	Leu	Ser	Ser	Asn	Ser	Asp	Gly	Ile	Ser	Pro	Lys	Arg	Arg
			420					425					430		
Arg	Leu	Ser	Ser	Ser	Leu	Asn	Pro	Ser	Lys	Arg	Ala	Pro	Lys	Gln	Thr
		435					440					445			
Glu	Glu	Ile	Lys	His	Val	Asp	Met	Asn	Gln	Lys	Ser	Ile	Leu	Trp	Ser
	450					455					460				
Ala	Leu	Lys	Gln	Lys	Ala	Glu	Ser	Leu	Gln	Ile	Ser	Leu	Glu	Tyr	Ser
	465				470					475					480
Gly	Leu	Lys	Asn	Pro	Val	Ile	Glu	Met	Leu	Glu	Gly	Ile	Ala	Val	Val
				485					490					495	
Leu	Gln	Leu	Thr	Ala	Leu	Cys	Thr	Val	His	Cys	Ser	His	Gln	Asn	Met
			500					505					510		
Asn	Cys	Arg	Thr	Phe	Lys	Asp	Cys	Gln	His	Lys	Ser	Lys	Lys	Lys	Pro
		515					520					525			
Ser	Val	Val	Ile	Thr	Trp	Met	Ser	Leu	Asp	Phe	Tyr	Thr	Lys	Val	Leu
		530				535					540				
Lys	Ser	Cys	Arg	Ser	Leu	Leu	Glu	Ser	Val	Gln	Lys	Leu	Asp	Leu	Glu
	545				550					555					560
Ala	Thr	Ile	Asp	Lys	Val	Val	Lys	Ile	Tyr	Asp	Ala	Leu	Ile	Tyr	Met
				565					570					575	
Gln	Val	Asn	Ser	Ser	Phe	Glu	Asp	His	Ile	Leu	Glu	Asp	Leu	Cys	Gly
			580					585					590		
Met	Leu	Ser	Leu	Pro	Trp	Ile	Tyr	Ser	His	Ser	Asp	Asp	Gly	Cys	Leu
		595					600					605			

Lys	Leu	Thr	Thr	Phe	Ala	Ala	Asn	Leu	Leu	Thr	Leu	Ser	Cys	Arg	Ile
610						615					620				
Ser	Asp	Ser	Tyr	Ser	Pro	Gln	Ala	Gln	Ser	Arg	Cys	Val	Phe	Leu	Leu
625					630					635					640
Thr	Leu	Phe	Pro	Arg	Arg	Ile	Phe	Leu	Glu	Trp	Arg	Thr	Ala	Val	Tyr
			645						650					655	
Asn	Trp	Ala	Leu	Gln	Ser	Ser	His	Glu	Val	Ile	Arg	Ala	Ser	Cys	Val
		660						665					670		
Ser	Gly	Phe	Phe	Ile	Leu	Leu	Gln	Gln	Gln	Asn	Ser	Cys	Asn	Arg	Val
	675						680					685			
Pro	Lys	Ile	Leu	Ile	Asp	Lys	Val	Lys	Asp	Asp	Ser	Asp	Ile	Val	Lys
690						695					700				
Lys	Glu	Phe	Ala	Ser	Ile	Leu	Gly	Gln	Leu	Val	Cys	Thr	Leu	His	Gly
705					710					715					720
Met	Phe	Tyr	Leu	Thr	Ser	Ser	Leu	Thr	Glu	Pro	Phe	Ser	Glu	His	Gly
				725					730					735	
His	Val	Asp	Leu	Phe	Cys	Arg	Asn	Leu	Lys	Ala	Thr	Ser	Gln	His	Glu
		740						745					750		
Cys	Ser	Ser	Ser	Gln	Leu	Lys	Ala	Ser	Val	Cys	Lys	Pro	Phe	Leu	Phe
		755					760					765			
Leu	Leu	Lys	Lys	Lys	Ile	Pro	Ser	Pro	Val	Lys	Leu	Ala	Phe	Ile	Asp
770						775					780				
Asn	Leu	His	His	Leu	Cys	Lys	His	Leu	Asp	Phe	Arg	Glu	Asp	Glu	Thr
785					790					795					800
Asp	Val	Lys	Ala	Val	Leu	Gly	Thr	Leu	Leu	Asn	Leu	Met	Glu	Asp	Pro
				805					810					815	
Asp	Lys	Asp	Val	Arg	Val	Ala	Phe	Ser	Gly	Asn	Ile	Lys	His	Ile	Leu
			820					825					830		
Glu	Ser	Leu	Asp	Ser	Glu	Asp	Gly	Phe	Ile	Lys	Glu	Leu	Phe	Val	Leu
		835					840					845			
Arg	Met	Lys	Glu	Ala	Tyr	Thr	His	Ala	Gln	Ile	Ser	Arg	Asn	Asn	Glu
850						855					860				
Leu	Lys	Asp	Thr	Leu	Ile	Leu	Thr	Thr	Gly	Asp	Ile	Gly	Arg	Ala	Ala
865					870					875					880
Lys	Gly	Asp	Leu	Val	Pro	Phe	Ala	Leu	Leu	His	Leu	Leu	His	Cys	Leu
				885					890					895	
Leu	Ser	Lys	Ser	Ala	Ser	Val	Ser	Gly	Ala	Ala	Tyr	Thr	Glu	Ile	Arg
			900					905					910		
Ala	Leu	Val	Ala	Ala	Lys	Ser	Val	Lys	Leu	Gln	Ser	Phe	Phe	Ser	Gln
		915					920					925			
Tyr	Lys	Lys	Pro	Ile	Cys	Gln	Phe	Leu	Val	Glu	Ser	Leu	His	Ser	Ser
930						935					940				
Gln	Met	Thr	Ala	Leu	Pro	Asn	Thr	Pro	Cys	Gln	Asn	Ala	Asp	Val	Arg
945					950					955					960
Lys	Gln	Asp	Val	Ala	His	Gln	Arg	Glu	Met	Ala	Leu	Asn	Thr	Leu	Ser
				965					970					975	
Glu	Ile	Ala	Asn	Val	Phe	Asp	Phe	Pro	Asp	Leu	Asn	Arg	Phe	Leu	Thr
		980						985					990		
Arg	Thr	Leu	Gln	Val	Leu	Leu	Pro	Asp	Leu	Ala	Ala	Lys	Ala	Ser	Pro
		995					1000					1005			
Ala	Ala	Ser	Ala	Leu	Ile	Arg	Thr	Leu	Gly	Lys	Gln	Leu	Asn	Val	
1010						1015					1020				
Asn	Arg	Arg	Glu	Ile	Leu	Ile	Asn	Asn	Phe	Lys	Tyr	Ile	Phe	Ser	
1025						1030					1035				
His	Leu	Val	Cys	Ser	Cys	Ser	Lys	Asp	Glu	Leu	Glu	Arg	Ala	Leu	
1040						1045					1050				
His	Tyr	Leu	Lys	Asn	Glu	Thr	Glu	Ile	Glu	Leu	Gly	Ser	Leu	Leu	
1055						1060					1065				
Arg	Gln	Asp	Phe	Gln	Gly	Leu	His	Asn	Glu	Leu	Leu	Leu	Arg	Ile	
1070						1075					1080				
Gly	Glu	His	Tyr	Gln	Gln	Val	Phe	Asn	Gly	Leu	Ser	Ile	Leu	Ala	
1085						1090					1095				

Ser	Phe	Ala	Ser	Ser	Asp	Asp	Pro	Tyr	Gln	Gly	Pro	Arg	Asp	Ile
1100						1105					1110			
Ile	Ser	Pro	Glu	Leu	Met	Ala	Asp	Tyr	Leu	Gln	Pro	Lys	Leu	Leu
1115						1120					1125			
Gly	Ile	Leu	Ala	Phe	Phe	Asn	Met	Gln	Leu	Leu	Ser	Ser	Ser	Val
1130						1135					1140			
Gly	Ile	Glu	Asp	Lys	Lys	Met	Ala	Leu	Asn	Ser	Leu	Met	Ser	Leu
1145						1150					1155			
Met	Lys	Leu	Met	Gly	Pro	Lys	His	Val	Ser	Ser	Val	Arg	Val	Lys
1160						1165					1170			
Met	Met	Thr	Thr	Leu	Arg	Thr	Gly	Leu	Arg	Phe	Lys	Asp	Asp	Phe
1175						1180					1185			
Pro	Glu	Leu	Cys	Cys	Arg	Ala	Trp	Asp	Cys	Phe	Val	Arg	Cys	Leu
1190						1195					1200			
Asp	His	Ala	Cys	Leu	Gly	Ser	Leu	Leu	Ser	His	Val	Ile	Val	Ala
1205						1210					1215			
Leu	Leu	Pro	Leu	Ile	His	Ile	Gln	Pro	Lys	Glu	Thr	Ala	Ala	Ile
1220						1225					1230			
Phe	His	Tyr	Leu	Ile	Ile	Glu	Asn	Arg	Asp	Ala	Val	Gln	Asp	Phe
1235						1240					1245			
Leu	His	Glu	Ile	Tyr	Phe	Leu	Pro	Asp	His	Pro	Glu	Leu	Lys	Lys
1250						1255					1260			
Ile	Lys	Ala	Val	Leu	Gln	Glu	Tyr	Arg	Lys	Glu	Thr	Ser	Glu	Ser
1265						1270					1275			
Thr	Asp	Leu	Gln	Thr	Thr	Leu	Gln	Leu	Ser	Met	Lys	Ala	Ile	Gln
1280						1285					1290			
His	Glu	Asn	Val	Asp	Val	Arg	Ile	His	Ala	Leu	Thr	Ser	Leu	Lys
1295						1300					1305			
Glu	Thr	Leu	Tyr	Lys	Asn	Gln	Glu	Lys	Leu	Ile	Lys	Tyr	Ala	Thr
1310						1315					1320			
Asp	Ser	Glu	Thr	Val	Glu	Pro	Ile	Ile	Ser	Gln	Leu	Val	Thr	Val
1325						1330					1335			
Leu	Leu	Lys	Gly	Cys	Gln	Asp	Ala	Asn	Ser	Gln	Ala	Arg	Leu	Leu
1340						1345					1350			
Cys	Gly	Glu	Cys	Leu	Gly	Glu	Leu	Gly	Ala	Ile	Asp	Pro	Gly	Arg
1355						1360					1365			
Leu	Asp	Phe	Ser	Thr	Thr	Glu	Thr	Gln	Gly	Lys	Asp	Phe	Thr	Phe
1370						1375					1380			
Val	Thr	Gly	Val	Glu	Asp	Ser	Ser	Phe	Ala	Tyr	Gly	Leu	Leu	Met
1385						1390					1395			
Glu	Leu	Thr	Arg	Ala	Tyr	Leu	Ala	Tyr	Ala	Asp	Asn	Ser	Arg	Ala
1400						1405					1410			
Gln	Asp	Ser	Ala	Ala	Tyr	Ala	Ile	Gln	Glu	Leu	Leu	Ser	Ile	Tyr
1415						1420					1425			
Asp	Cys	Arg	Glu	Met	Glu	Thr	Asn	Gly	Pro	Gly	His	Gln	Leu	Trp
1430						1435					1440			
Arg	Arg	Phe	Pro	Glu	His	Val	Arg	Glu	Ile	Leu	Glu	Pro	His	Leu
1445						1450					1455			
Asn	Thr	Arg	Tyr	Lys	Ser	Ser	Gln	Lys	Ser	Thr	Asp	Trp	Ser	Gly
1460						1465					1470			
Val	Lys	Lys	Pro	Ile	Tyr	Leu	Ser	Lys	Leu	Gly	Ser	Asn	Phe	Ala
1475						1480					1485			
Glu	Trp	Ser	Ala	Ser	Trp	Ala	Gly	Tyr	Leu	Ile	Thr	Lys	Val	Arg
1490						1495					1500			
His	Asp	Leu	Ala	Ser	Lys	Ile	Phe	Thr	Cys	Cys	Ser	Ile	Met	Met
1505						1510					1515			
Lys	His	Asp	Phe	Lys	Val	Thr	Ile	Tyr	Leu	Leu	Pro	His	Ile	Leu
1520						1525					1530			
Val	Tyr	Val	Leu	Leu	Gly	Cys	Asn	Gln	Glu	Asp	Gln	Gln	Glu	Val
1535						1540					1545			
Tyr	Ala	Glu	Ile	Met	Ala	Val	Leu	Lys	His	Asp	Asp	Gln	His	Thr
1550						1555					1560			

Ile	Asn	Thr	Gln	Asp	Ile	Ala	Ser	Asp	Leu	Cys	Gln	Leu	Ser	Thr
1565						1570					1575			
Gln	Thr	Val	Phe	Ser	Met	Leu	Asp	His	Leu	Thr	Gln	Trp	Ala	Arg
1580						1585					1590			
His	Lys	Phe	Gln	Ala	Leu	Lys	Ala	Glu	Lys	Cys	Pro	His	Ser	Lys
1595						1600					1605			
Ser	Asn	Arg	Asn	Lys	Val	Asp	Ser	Met	Val	Ser	Thr	Val	Asp	Tyr
1610						1615					1620			
Glu	Asp	Tyr	Gln	Ser	Val	Thr	Arg	Phe	Leu	Asp	Leu	Ile	Pro	Gln
1625						1630					1635			
Asp	Thr	Leu	Ala	Val	Ala	Ser	Phe	Arg	Ser	Lys	Ala	Tyr	Thr	Arg
1640						1645					1650			
Ala	Val	Met	His	Phe	Glu	Ser	Phe	Ile	Thr	Glu	Lys	Lys	Gln	Asn
1655						1660					1665			
Ile	Gln	Glu	His	Leu	Gly	Phe	Leu	Gln	Lys	Leu	Tyr	Ala	Ala	Met
1670						1675					1680			
His	Glu	Pro	Asp	Gly	Val	Ala	Gly	Val	Ser	Ala	Ile	Arg	Lys	Ala
1685						1690					1695			
Glu	Pro	Ser	Leu	Lys	Glu	Gln	Ile	Leu	Glu	His	Glu	Ser	Leu	Gly
1700						1705					1710			
Leu	Leu	Arg	Asp	Ala	Thr	Ala	Cys	Tyr	Asp	Arg	Ala	Ile	Gln	Leu
1715						1720					1725			
Glu	Pro	Asp	Gln	Ile	Ile	His	Tyr	His	Gly	Val	Val	Lys	Ser	Met
1730						1735					1740			
Leu	Gly	Leu	Gly	Gln	Leu	Ser	Thr	Val	Ile	Thr	Gln	Val	Asn	Gly
1745						1750					1755			
Val	His	Ala	Asn	Arg	Ser	Glu	Trp	Thr	Asp	Glu	Leu	Asn	Thr	Tyr
1760						1765					1770			
Arg	Val	Glu	Ala	Ala	Trp	Lys	Leu	Ser	Gln	Trp	Asp	Leu	Val	Glu
1775						1780					1785			
Asn	Tyr	Leu	Ala	Ala	Asp	Gly	Lys	Ser	Thr	Thr	Trp	Ser	Val	Arg
1790						1795					1800			
Leu	Gly	Gln	Leu	Leu	Leu	Ser	Ala	Lys	Lys	Arg	Asp	Ile	Thr	Ala
1805						1810					1815			
Phe	Tyr	Asp	Ser	Leu	Lys	Leu	Val	Arg	Ala	Glu	Gln	Ile	Val	Pro
1820						1825					1830			
Leu	Ser	Ala	Ala	Ser	Phe	Glu	Arg	Gly	Ser	Tyr	Gln	Arg	Gly	Tyr
1835						1840					1845			
Glu	Tyr	Ile	Val	Arg	Leu	His	Met	Leu	Cys	Glu	Leu	Glu	His	Ser
1850						1855					1860			
Ile	Lys	Pro	Leu	Phe	Gln	His	Ser	Pro	Gly	Asp	Ser	Ser	Gln	Glu
1865						1870					1875			
Asp	Ser	Leu	Asn	Trp	Val	Ala	Arg	Leu	Glu	Met	Thr	Gln	Asn	Ser
1880						1885					1890			
Tyr	Arg	Ala	Lys	Asp	Pro	Ile	Leu	Ala	Leu	Arg	Arg	Ala	Leu	Leu
1895						1900					1905			
Ser	Leu	Asn	Lys	Arg	Pro	Asp	Tyr	Asn	Glu	Met	Val	Gly	Glu	Cys
1910						1915					1920			
Trp	Leu	Gln	Ser	Ala	Arg	Val	Ala	Arg	Lys	Ala	Gly	His	His	Gln
1925						1930					1935			
Thr	Ala	Tyr	Asn	Ala	Leu	Leu	Asn	Ala	Gly	Glu	Ser	Arg	Leu	Ala
1940						1945					1950			
Glu	Leu	Tyr	Val	Glu	Arg	Ala	Lys	Trp	Leu	Trp	Ser	Lys	Gly	Asp
1955						1960					1965			
Val	His	Gln	Ala	Leu	Ile	Val	Leu	Gln	Lys	Gly	Val	Glu	Leu	Cys
1970						1975					1980			
Phe	Pro	Glu	Asn	Glu	Thr	Pro	Pro	Glu	Gly	Lys	Asn	Met	Leu	Ile
1985						1990					1995			
His	Gly	Arg	Ala	Met	Leu	Leu	Val	Gly	Arg	Phe	Met	Glu	Glu	Thr
2000						2005					2010			
Ala	Asn	Phe	Glu	Ser	Asn	Ala	Ile	Met	Lys	Lys	Tyr	Lys	Asp	Val
2015						2020					2025			

Thr	Ala	Cys	Leu	Pro	Glu	Trp	Glu	Asp	Gly	His	Phe	Tyr	Leu	Ala
2030						2035					2040			
Lys	Tyr	Tyr	Asp	Lys	Leu	Met	Pro	Met	Val	Thr	Asp	Asn	Lys	Met
2045						2050					2055			
Glu	Lys	Gln	Gly	Asp	Leu	Ile	Arg	Tyr	Ile	Val	Leu	His	Phe	Gly
2060						2065					2070			
Arg	Ser	Leu	Gln	Tyr	Gly	Asn	Gln	Phe	Ile	Tyr	Gln	Ser	Met	Pro
2075						2080					2085			
Arg	Met	Leu	Thr	Leu	Trp	Leu	Asp	Tyr	Gly	Thr	Lys	Ala	Tyr	Glu
2090						2095					2100			
Trp	Glu	Lys	Ala	Gly	Arg	Ser	Asp	Arg	Val	Gln	Met	Arg	Asn	Asp
2105						2110					2115			
Leu	Gly	Lys	Ile	Asn	Lys	Val	Ile	Thr	Glu	His	Thr	Asn	Tyr	Leu
2120						2125					2130			
Ala	Pro	Tyr	Gln	Phe	Leu	Thr	Ala	Phe	Ser	Gln	Leu	Ile	Ser	Arg
2135						2140					2145			
Ile	Cys	His	Ser	His	Asp	Glu	Val	Phe	Val	Val	Leu	Met	Glu	Ile
2150						2155					2160			
Ile	Ala	Lys	Val	Phe	Leu	Ala	Tyr	Pro	Gln	Gln	Ala	Met	Trp	Met
2165						2170					2175			
Met	Thr	Ala	Val	Ser	Lys	Ser	Ser	Tyr	Pro	Met	Arg	Val	Asn	Arg
2180						2185					2190			
Cys	Lys	Glu	Ile	Leu	Asn	Lys	Ala	Ile	His	Met	Lys	Lys	Ser	Leu
2195						2200					2205			
Glu	Lys	Phe	Val	Gly	Asp	Ala	Thr	Arg	Leu	Thr	Asp	Lys	Leu	Leu
2210						2215					2220			
Glu	Leu	Cys	Asn	Lys	Pro	Val	Asp	Gly	Ser	Ser	Ser	Thr	Leu	Ser
2225						2230					2235			
Met	Ser	Thr	His	Phe	Lys	Met	Leu	Lys	Lys	Leu	Val	Glu	Glu	Ala
2240						2245					2250			
Thr	Phe	Ser	Glu	Ile	Leu	Ile	Pro	Leu	Gln	Ser	Val	Met	Ile	Pro
2255						2260					2265			
Thr	Leu	Pro	Ser	Ile	Leu	Gly	Thr	His	Ala	Asn	His	Ala	Ser	His
2270						2275					2280			
Glu	Pro	Phe	Pro	Gly	His	Trp	Ala	Tyr	Ile	Ala	Gly	Phe	Asp	Asp
2285						2290					2295			
Met	Val	Glu	Ile	Leu	Ala	Ser	Leu	Gln	Lys	Pro	Lys	Lys	Ile	Ser
2300						2305					2310			
Leu	Lys	Gly	Ser	Asp	Gly	Lys	Phe	Tyr	Ile	Met	Met	Cys	Lys	Pro
2315						2320					2325			
Lys	Asp	Asp	Leu	Arg	Lys	Asp	Cys	Arg	Leu	Met	Glu	Phe	Asn	Ser
2330						2335					2340			
Leu	Ile	Asn	Lys	Cys	Leu	Arg	Lys	Asp	Ala	Glu	Ser	Arg	Arg	Arg
2345						2350					2355			
Glu	Leu	His	Ile	Arg	Thr	Tyr	Ala	Val	Ile	Pro	Leu	Asn	Asp	Glu
2360						2365					2370			
Cys	Gly	Ile	Ile	Glu	Trp	Val	Asn	Asn	Thr	Ala	Gly	Leu	Arg	Pro
2375						2380					2385			
Ile	Leu	Thr	Lys	Leu	Tyr	Lys	Glu	Lys	Gly	Val	Tyr	Met	Thr	Gly
2390						2395					2400			
Lys	Glu	Leu	Arg	Gln	Cys	Met	Leu	Pro	Lys	Ser	Ala	Ala	Leu	Ser
2405						2410					2415			
Glu	Lys	Leu	Lys	Val	Phe	Arg	Glu	Phe	Leu	Leu	Pro	Arg	His	Pro
2420						2425					2430			
Pro	Ile	Phe	His	Glu	Trp	Phe	Leu	Arg	Thr	Phe	Pro	Asp	Pro	Thr
2435						2440					2445			
Ser	Trp	Tyr	Ser	Ser	Arg	Ser	Ala	Tyr	Cys	Arg	Ser	Thr	Ala	Val
2450						2455					2460			
Met	Ser	Met	Val	Gly	Tyr	Ile	Leu	Gly	Leu	Gly	Asp	Arg	His	Gly
2465						2470					2475			
Glu	Asn	Ile	Leu	Phe	Asp	Ser	Leu	Thr	Gly	Glu	Cys	Val	His	Val
2480						2485					2490			

Asp	Phe	Asn	Cys	Leu	Phe	Asn	Lys	Gly	Glu	Thr	Phe	Glu	Val	Pro
2495						2500					2505			
Glu	Ile	Val	Pro	Phe	Arg	Leu	Thr	His	Asn	Met	Val	Asn	Gly	Met
2510						2515					2520			
Gly	Pro	Met	Gly	Thr	Glu	Gly	Leu	Phe	Arg	Arg	Ala	Cys	Glu	Val
2525						2530					2535			
Thr	Met	Arg	Leu	Met	Arg	Asp	Gln	Arg	Glu	Pro	Leu	Met	Ser	Val
2540						2545					2550			
Leu	Lys	Thr	Phe	Leu	His	Asp	Pro	Leu	Val	Glu	Trp	Ser	Lys	Pro
2555						2560					2565			
Val	Lys	Gly	His	Ser	Lys	Ala	Pro	Leu	Asn	Glu	Thr	Gly	Glu	Val
2570						2575					2580			
Val	Asn	Glu	Lys	Ala	Lys	Thr	His	Val	Leu	Asp	Ile	Glu	Gln	Arg
2585						2590					2595			
Leu	Gln	Gly	Val	Ile	Lys	Thr	Arg	Asn	Arg	Val	Thr	Gly	Leu	Pro
2600						2605					2610			
Leu	Ser	Ile	Glu	Gly	His	Val	His	Tyr	Leu	Ile	Gln	Glu	Ala	Thr
2615						2620					2625			
Asp	Glu	Asn	Leu	Leu	Cys	Gln	Met	Tyr	Leu	Gly	Trp	Thr	Pro	Tyr
2630						2635					2640			
Met														

<210> 3
 <211> 8022
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (585)..(7742)

<400> 3

ggtaccaagt	aaaaactgct	tagtaagtat	aaaacacaga	agaatccgcg	atctagttaa	60
ccaatgccct	gcgtatgacg	ctccactgac	gctatagtca	atgagaacta	ggatgtgcga	120
ttataactta	tcttttcaat	attttcttat	tattttattta	agaaataatt	gaattaaaac	180
tcattttcttc	ttttattagc	cgtaaaatag	cttatttttct	ctcctactac	ctttcaacaa	240
taactttttt	ttttgtttat	tgaccattat	aatcacatca	aaagtcaaaa	aattcaatca	300
ttatcagaaa	catccagcct	aatattactt	aaaagttagt	ttcctctgaa	aattcagtat	360
cacaaaagct	cgtttaattag	catcgctcga	tacttagtgc	accatgcac	ttcctttacc	420
tcgtgagtgg	aaatcgattt	gataatcgat	tgccactttt	cgcataattc	tattgagata	480
ttttattact	tacaatcgtc	ttttataaat	gctcaagact	ttgaacgcgc	gtgttgcgtt	540
ttaaaaaggc	cttttttttga	attgaatcaa	tggtttgata	tagt atg agc	caa cac	596
				Met Ser Gln His		
				1		
gca aaa agg	aaa gct ggg	tca ctc gat	ctt tca ccc	aga ggc tta	gat	644
Ala Lys Arg	Lys Ala Gly	Ser Leu Asp	Leu Ser Pro	Arg Gly Leu	Asp	
5	10	15	20			
gac aga cag	gct ttc gga	cag ctt ttg	aaa gaa gta	tta gca tta	gac	692
Asp Arg Gln	Ala Phe Gly	Gln Leu Leu	Lys Glu Val	Leu Ala Leu	Asp	
	25	30	35			
aaa gaa cat	gag tta ggt	aga agt aat	tct tta cca	tct atg acc	tcc	740
Lys Glu His	Glu Leu Gly	Arg Ser Asn	Ser Leu Pro	Ser Met Thr	Ser	
	40	45	50			
gag ctt gtt	gaa gtt tta	att gaa gtt	ggt ctt cta	gct ttt aaa	cat	788
Glu Leu Val	Glu Val Leu	Ile Glu Val	Gly Leu Leu	Ala Phe Lys	His	
	55	60	65			
gat gat tca	aaa tct gaa	ttt atc tct	cct aag atg	cta aaa gaa	gcc	836
Asp Asp Ser	Lys Ser Glu	Phe Ile Ser	Pro Lys Met	Leu Lys Glu	Ala	
70	75	80				

cat	ctc	tct	cta	caa	gcg	tta	atg	cta	atc	tta	aaa	agg	tct	ccg	aca	884
His	Leu	Ser	Leu	Gln	Ala	Leu	Met	Leu	Ile	Leu	Lys	Arg	Ser	Pro	Thr	
85					90					95					100	
ggt	ttg	cgg	gag	att	aaa	tca	tct	ggt	act	ctt	ttg	gat	tgg	att	tta	932
Val	Leu	Arg	Glu	Ile	Lys	Ser	Ser	Val	Thr	Leu	Leu	Asp	Trp	Ile	Leu	
				105					110						115	
ccc	agg	act	ata	tca	ttg	ttt	gct	gat	att	cgt	ttt	att	aag	tta	ttt	980
Pro	Arg	Thr	Ile	Ser	Leu	Phe	Ala	Asp	Ile	Arg	Phe	Ile	Lys	Leu	Phe	
			120					125					130			
gac	tca	tta	aaa	gag	ttt	cat	aag	cta	att	tat	cag	cta	atc	agt	gaa	1028
Asp	Ser	Leu	Lys	Glu	Phe	His	Lys	Leu	Ile	Tyr	Gln	Leu	Ile	Ser	Glu	
			135				140						145			
aag	tca	ttc	cta	tgg	gac	tta	tat	gct	tcg	ttt	atg	cgt	tat	tgg	aaa	1076
Lys	Ser	Phe	Leu	Trp	Asp	Leu	Tyr	Ala	Ser	Phe	Met	Arg	Tyr	Trp	Lys	
			150				155					160				
tat	tat	att	aca	aac	gtt	tct	tct	ata	gtt	ctc	caa	atc	act	aat	gct	1124
Tyr	Tyr	Ile	Thr	Asn	Val	Ser	Ser	Ile	Val	Leu	Gln	Ile	Thr	Asn	Ala	
					170					175					180	
aca	ttc	cct	tac	aag	atg	ccc	tca	ccc	aat	tct	caa	cca	ttg	cag	agt	1172
Thr	Phe	Pro	Tyr	Lys	Met	Pro	Ser	Pro	Asn	Ser	Gln	Pro	Leu	Gln	Ser	
				185					190						195	
atc	tcc	cca	aat	tat	cca	acc	cat	cga	gag	gac	aaa	ttt	gat	tta	ctt	1220
Ile	Ser	Pro	Asn	Tyr	Pro	Thr	His	Arg	Glu	Asp	Lys	Phe	Asp	Leu	Leu	
			200					205					210			
atc	att	aat	ata	gag	gag	gct	tgt	aca	ttt	ttc	ttt	gaa	agt	gcc	cat	1268
Ile	Ile	Asn	Ile	Glu	Glu	Ala	Cys	Thr	Phe	Phe	Phe	Glu	Ser	Ala	His	
			215				220						225			
ttt	ttt	gca	caa	tgc	tca	tat	tta	aag	aaa	tcc	aat	ttt	cct	agt	cca	1316
Phe	Phe	Ala	Gln	Cys	Ser	Tyr	Leu	Lys	Lys	Ser	Asn	Phe	Pro	Ser	Pro	
			230				235				240					
cct	ctc	ttt	aca	gcg	tgg	act	tgg	atc	aag	cca	tgt	ttt	ttt	aat	ttt	1364
Pro	Leu	Phe	Thr	Ala	Trp	Thr	Trp	Ile	Lys	Pro	Cys	Phe	Phe	Asn	Phe	
					250					255					260	
ggt	att	tta	tta	aaa	cga	atc	agc	atc	gga	gac	tca	cag	ctc	ttt	cta	1412
Val	Ile	Leu	Leu	Lys	Arg	Ile	Ser	Ile	Gly	Asp	Ser	Gln	Leu	Phe	Leu	
				265					270						275	
cat	ttg	cat	tca	cgt	ata	gtc	caa	act	tta	tgc	tgt	ttt	tcc	ttg	aat	1460
His	Leu	His	Ser	Arg	Ile	Val	Gln	Thr	Leu	Cys	Cys	Phe	Ser	Leu	Asn	
				280				285					290			
ttt	ata	tat	cat	ggc	ctt	ccc	att	tgt	gaa	aaa	tct	aaa	cat	att	tta	1508
Phe	Ile	Tyr	His	Gly	Leu	Pro	Ile	Cys	Glu	Lys	Ser	Lys	His	Ile	Leu	
			295				300					305				
atg	tcc	tcc	atc	aac	tta	aca	ttg	gga	tca	ttg	aag	aaa	act	tat	aca	1556
Met	Ser	Ser	Ile	Asn	Leu	Thr	Leu	Gly	Ser	Leu	Lys	Lys	Thr	Tyr	Thr	
						315						320				
ggt	gct	aat	act	gct	ata	tct	ctt	ttt	ttt	ctc	tct	tta	ttt	ggt	tta	1604
Val	Ala	Asn	Thr	Ala	Ile	Ser	Leu	Phe	Phe	Leu	Ser	Leu	Phe	Val	Leu	
					330					335					340	
ccc	aaa	act	gta	gct	ggg	cta	ttc	tat	cct	ttt	ggg	ggt	tcc	tta	ctt	1652
Pro	Lys	Thr	Val	Ala	Gly	Leu	Phe	Tyr	Pro	Phe	Gly	Val	Ser	Leu	Leu	
				345					350						355	
tct	gac	ttc	aag	gta	tta	gag	caa	ctt	gaa	cca	gat	tct	gat	ctc	aaa	1700
Ser	Asp	Phe	Lys	Val	Leu	Glu	Gln	Leu	Glu	Pro	Asp	Ser	Asp	Leu	Lys	
			360					365					370			
aag	gca	ata	ata	tta	ttt	aag	tgc	aga	tac	caa	agt	tca	gaa	ata	gat	1748
Lys	Ala	Ile	Ile	Leu	Phe	Lys	Cys	Arg	Tyr	Gln	Ser	Ser	Glu	Ile	Asp	
							380						385			
caa	aca	act	ctc	cgt	gct	ttt	ggc	gaa	att	tgt	act	ggg	aaa	ctt	gaa	1796
Gln	Thr	Thr	Leu	Arg	Ala	Phe	Gly	Glu	Ile	Cys	Thr	Gly	Lys	Leu	Glu	
			390				395					400				
aac	acg	ttg	ttt	tct	aac	tct	gaa	tta	aac	ctt	ttt	ctt	tta	cat	tat	1844
Asn	Thr	Leu	Phe	Ser	Asn	Ser	Glu	Leu	Asn	Leu	Phe	Leu	Leu	His	Tyr	
					410					415					420	

ctt tcc ttg gac aat gac ttg tca aat att ctt aaa gtg gat ttc cag	1892
Leu Ser Leu Asp Asn Asp Leu Ser Asn Ile Leu Lys Val Asp Phe Gln	
425 430 435	
aat ggt cat aac ata tgt aca ttt gca aaa tgg tgt ata aac aac aac	1940
Asn Gly His Asn Ile Cys Thr Phe Ala Lys Trp Cys Ile Asn Asn Asn	
440 445 450	
tta gat gaa ccg tct aat tta aag cac ttt cgt gaa atg tta gat tat	1988
Leu Asp Glu Pro Ser Asn Leu Lys His Phe Arg Glu Met Leu Asp Tyr	
455 460 465	
tat agc tct cat aat gtt aca ata agt gag gac gac ctg aag aac ttc	2036
Tyr Ser Ser His Asn Val Thr Ile Ser Glu Asp Asp Leu Lys Asn Phe	
470 475 480	
tct tta gtt ttg tgt act cat gtt gca aag gtg aat gag aaa aca aat	2084
Ser Leu Val Leu Cys Thr His Val Ala Lys Val Asn Glu Lys Thr Asn	
485 490 495 500	
agt att ttc cgc aca tat gaa gta cat ggt tgt gaa gtt tgt aac tca	2132
Ser Ile Phe Arg Thr Tyr Glu Val His Gly Cys Glu Val Cys Asn Ser	
505 510 515	
ttt tgt tta cta ttt gat gag cgg tcg cct ttt aaa att cct tat cac	2180
Phe Cys Leu Leu Phe Asp Glu Arg Ser Pro Phe Lys Ile Pro Tyr His	
520 525 530	
gaa ttg ttt tgt gca ttg cta aaa aat ccc gac ata att tcc tct tct	2228
Glu Leu Phe Cys Ala Leu Leu Lys Asn Pro Asp Ile Ile Ser Ser Ser	
535 540 545	
gtt aaa caa tca ttg ttg ctt gat ggc ttt ttt cgg tgg agc cag cat	2276
Val Lys Gln Ser Leu Leu Leu Asp Gly Phe Phe Arg Trp Ser Gln His	
550 555 560	
tgc tca aac ttt aat aaa gaa tca atg tta agt tta aga gaa ttt att	2324
Cys Ser Asn Phe Asn Lys Glu Ser Met Leu Ser Leu Arg Glu Phe Ile	
565 570 575 580	
atg aaa gca tta gcc agt act tca aga tgt tta cgt gtt gtt gct gca	2372
Met Lys Ala Leu Ala Ser Thr Ser Arg Cys Leu Arg Val Val Ala Ala	
585 590 595	
aaa gtt ttg ccc att ttc att aag gga cct aat aat ctt gat ata gtt	2420
Lys Val Leu Pro Ile Phe Ile Lys Gly Pro Asn Asn Leu Asp Ile Val	
600 605 610	
gaa ttt cac aag gaa agt aaa gcc ttg att ttt aat acg ttg aaa ata	2468
Glu Phe His Lys Glu Ser Lys Ala Leu Ile Phe Asn Thr Leu Lys Ile	
615 620 625	
ttg gcg gtg gaa aat aca gct att tta gaa acg gtc att ctt tcc tgg	2516
Leu Ala Val Glu Asn Thr Ala Ile Leu Glu Thr Val Ile Leu Ser Trp	
630 635 640	
atc tcc tta tct aga gtg gta gaa gaa gaa gaa gaa cat ttt gta cta	2564
Ile Ser Leu Ser Arg Val Val Glu Glu Glu Glu Glu Leu His Phe Val Leu	
645 650 655 660	
ttg gaa gtt ata tct tct gtg ata aac agc gga ata ttt tat caa ggc	2612
Leu Glu Val Ile Ser Ser Val Ile Asn Ser Gly Ile Phe Tyr Gln Gly	
665 670 675	
att ggt ctc agc gct ctg caa caa att gcc tcg acg cgt cat ata tcc	2660
Ile Gly Leu Ser Ala Leu Gln Gln Ile Ala Ser Thr Arg His Ile Ser	
680 685 690	
gtt tgg caa tta ctt tct cca tat tgg cca aca gtg tcc gtt gcg att	2708
Val Trp Gln Leu Leu Ser Pro Tyr Trp Pro Thr Val Ser Val Ala Ile	
695 700 705	
gtc caa ggt atg ggt aaa aaa ccg aac ata gcc agt tta ttt gct cag	2756
Val Gln Gly Met Gly Lys Lys Pro Asn Ile Ala Ser Leu Phe Ala Gln	
710 715 720	
ctt atg aat att tcc gag ggc gat ttt ctt att cga aca cag gcg tac	2804
Leu Met Asn Ile Ser Glu Gly Asp Phe Leu Ile Arg Thr Gln Ala Tyr	
725 730 735 740	
act tta cca ttc ctt gta ctt act aaa aac aaa gcg tta ata gta cgt	2852
Thr Leu Pro Phe Leu Val Leu Thr Lys Asn Lys Ala Leu Ile Val Arg	
745 750 755	

ata gct gaa ctt tca caa agt gat gtt gct act ttg tgc ctt acc aat	2900
Ile Ala Glu Leu Ser Gln Ser Asp Val Ala Thr Leu Cys Leu Thr Asn	
760 765 770	
atg cat aaa atc ctt gct tcg cta ctt act acg gat cat cct aat ttg	2948
Met His Lys Ile Leu Ala Ser Leu Leu Thr Thr Asp His Pro Asn Leu	
775 780 785	
gaa gag agt gtg atg ctt ctt ctt tca ctg gcc act tct gat ttt gaa	2996
Glu Glu Ser Val Met Leu Leu Ser Leu Ala Thr Ser Asp Phe Glu	
790 795 800	
aaa gtt gat tta acg tct ttg tta cgc tct gat cct att tct att act	3044
Lys Val Asp Leu Thr Ser Leu Leu Arg Ser Asp Pro Ile Ser Ile Thr	
805 810 815 820	
gtg gag ttg tta cag ctt tat cag aat gat gtt cct cat gaa aaa att	3092
Val Glu Leu Leu Gln Leu Tyr Gln Asn Asp Val Pro His Glu Lys Ile	
825 830 835	
gaa aat gct tta aga aag gta gca atg att gtc tct caa gtg gtt aat	3140
Glu Asn Ala Leu Arg Lys Val Ala Met Ile Val Ser Gln Val Val Asn	
840 845 850	
gac gaa gac ttg agc aat aag gaa tta ctt tat gat ttt aat aat	3188
Asp Glu Asp Leu Ser Asn Lys Glu Leu Leu Tyr Asp Phe Phe Asn Asn	
855 860 865	
cac att ttg ggt atc tta gca gaa ttt tct aat atc ctt aac gac ctg	3236
His Ile Leu Gly Ile Leu Ala Glu Phe Ser Asn Ile Leu Asn Asp Leu	
870 875 880	
aaa gga aag act tca att aat gaa aag att aag aca att gtc ggc att	3284
Lys Gly Lys Thr Ser Ile Asn Glu Lys Ile Lys Thr Ile Val Gly Ile	
885 890 895 900	
gaa aaa atg tta tct tta tgt gga ggt gca gtc aaa ctt gga tta cca	3332
Glu Lys Met Leu Ser Leu Cys Gly Gly Ala Val Lys Leu Gly Leu Pro	
905 910 915	
cag ata ctt tct aat tta caa agt gct ttt caa aat gag cac tta agg	3380
Gln Ile Leu Ser Asn Leu Gln Ser Ala Phe Gln Asn Glu His Leu Arg	
920 925 930	
ttt tat gca atc aaa gct tgg ttc agt ttg ata tta gca acc aag gag	3428
Phe Tyr Ala Ile Lys Ala Trp Phe Ser Leu Ile Leu Ala Thr Lys Glu	
935 940 945	
ccc gag tat agt tca att gct ggt tta agt ctt gta att tta cct cct	3476
Pro Glu Tyr Ser Ser Ile Ala Gly Leu Ser Leu Val Ile Leu Pro Pro	
950 955 960	
tta ttc cct tat tta gaa cca caa gaa gca gag cta gta att caa ata	3524
Leu Phe Pro Tyr Leu Glu Pro Gln Glu Ala Glu Leu Val Ile Gln Ile	
965 970 975 980	
ttt gat ttt att tct tct gac aca cac aag tgc cta caa gga tta aag	3572
Phe Asp Phe Ile Ser Ser Asp Thr His Lys Cys Leu Gln Gly Leu Lys	
985 990 995	
tgg gct atc ccc acc agt ctg gat tca gcg tgc ttt agc ctt aag	3617
Trp Ala Ile Pro Thr Ser Leu Asp Ser Ala Cys Phe Ser Leu Lys	
1000 1005 1010	
gct aaa gaa ata ttc tgt tcg ctt caa aat gaa gat ttt tac tct	3662
Ala Lys Glu Ile Phe Cys Ser Leu Gln Asn Glu Asp Phe Tyr Ser	
1015 1020 1025	
gag ctt caa agt ata att aag tgt tta act aac gaa aat gag cca	3707
Glu Leu Gln Ser Ile Ile Lys Cys Leu Thr Asn Glu Asn Glu Pro	
1030 1035 1040	
gtt tgt tat tta ggt tta caa aaa tta gaa ctt ttt ttt caa gcc	3752
Val Cys Tyr Leu Gly Leu Gln Lys Leu Glu Leu Phe Phe Gln Ala	
1045 1050 1055	
aag gtg gac gag tta cat gac aca cta aat ttg gac ata tcc aac	3797
Lys Val Asp Glu Leu His Asp Thr Leu Asn Leu Asp Ile Ser Asn	
1060 1065 1070	
gaa gtt ctg gac caa tta cta aga tgc ctt tta gat tgt tgt gta	3842
Glu Val Leu Asp Gln Leu Leu Arg Cys Leu Leu Asp Cys Cys Val	
1075 1080 1085	

aaa tat gct tca	aca aat atg caa	ata tca tat ctt	gct gca aaa	3887
Lys Tyr Ala Ser	Thr Asn Met Gln	Ile Ser Tyr Leu	Ala Lys	
1090	1095	1100		
aat ctt ggt gaa	ttg ggt gcg ata	gat ccc agc cgc	gcc aag gct	3932
Asn Leu Gly Glu	Leu Gly Ala Ile	Asp Pro Ser Arg	Ala Lys Ala	
1105	1110	1115		
caa cat att att	aaa gaa aca gtt	gtt ctt gat aac	ttt gaa aac	3977
Gln His Ile Ile	Lys Glu Thr Val	Leu Asp Asn Phe	Glu Asn	
1120	1125	1130		
gga gaa gaa agt	ttg aag ttt att	cta gat ttt atg	caa tcg cag	4022
Gly Glu Glu Ser	Leu Lys Phe Ile	Leu Asp Phe Met	Gln Ser Gln	
1135	1140	1145		
tta att cca gct	ttc ctt gtt act	act gat act aaa	gca caa ggt	4067
Leu Ile Pro Ala	Phe Leu Val Thr	Thr Asp Thr Lys	Ala Gln Gly	
1150	1155	1160		
ttt ctt gcc tat	gct ctg caa gag	ttt cta aag ctt	ggt gga ttc	4112
Phe Leu Ala Tyr	Ala Leu Gln Glu	Phe Leu Lys Leu	Gly Gly Phe	
1165	1170	1175		
aag tcc gca gtg	att aat aaa aaa	aag gga cta act	gtg gta aca	4157
Lys Ser Ala Val	Ile Asn Lys Lys	Lys Gly Leu Thr	Val Val Thr	
1180	1185	1190		
gaa cat tgg atg	tct ttg cct gat	tta tcc aaa cgt	gtg ctt ata	4202
Glu His Trp Met	Ser Leu Pro Asp	Leu Ser Lys Arg	Val Leu Ile	
1195	1200	1205		
cca ttt tta act	tcc aag tat cat	tta aca cca atc	ccc aaa att	4247
Pro Phe Leu Thr	Ser Lys Tyr His	Leu Thr Pro Ile	Pro Lys Ile	
1210	1215	1220		
gac att cgg tac	cct att tat aaa	gaa aat gtt act	att cat act	4292
Asp Ile Arg Tyr	Pro Ile Tyr Lys	Glu Asn Val Thr	Ile His Thr	
1225	1230	1235		
tgg atg cag ttg	ttt tct ctt aaa	ttg atg gag tac	gcc cat tcg	4337
Trp Met Gln Leu	Phe Ser Leu Lys	Leu Met Glu Tyr	Ala His Ser	
1240	1245	1250		
caa aac gct gaa	aaa ata ttt ggt	att tgt tcg aaa	gta gtg aaa	4382
Gln Asn Ala Glu	Lys Ile Phe Gly	Ile Cys Ser Lys	Val Val Lys	
1255	1260	1265		
gac caa gag gtt	aac att ccc tgt	ttt ctt ctt ctt	gtt gtt	4427
Asp Gln Glu Val	Asn Ile Pro Cys	Phe Leu Leu Pro	Phe Leu Val	
1270	1275	1280		
tta aat gtt att	tta acc gag tca	gaa ctg gaa gtt	aat aaa gtc	4472
Leu Asn Val Ile	Leu Thr Glu Ser	Glu Leu Glu Val	Asn Lys Val	
1285	1290	1295		
att gaa gaa ttc	cag ctt gtt att	aat caa ccg gga	cct gat gga	4517
Ile Glu Glu Phe	Gln Leu Val Ile	Asn Gln Pro Gly	Pro Asp Gly	
1300	1305	1310		
tta aat tcc gtg	ggg caa caa aga	tac acc tca ttt	gta gat gta	4562
Leu Asn Ser Val	Gly Gln Gln Arg	Tyr Thr Ser Phe	Val Asp Val	
1315	1320	1325		
ttt ttt aag att	gtg gat tac ctt	aac aaa tgg ctt	cgc atg cga	4607
Phe Phe Lys Ile	Val Asp Tyr Leu	Asn Lys Trp Leu	Arg Met Arg	
1330	1335	1340		
aag aag agg aat	tgg gat aga cgt	tct gcc att gca	agg aaa gag	4652
Lys Lys Arg Asn	Trp Asp Arg Arg	Ser Ala Ile Ala	Arg Lys Glu	
1345	1350	1355		
aac cgt tat atg	tcg gtg gaa gat	gct acc tct cga	gaa tca tcg	4697
Asn Arg Tyr Met	Ser Val Glu Asp	Ala Thr Ser Arg	Glu Ser Ser	
1360	1365	1370		
atc tca aaa gtt	gag tca ttt ctt	tct cga ttt cct	tca aaa aca	4742
Ile Ser Lys Val	Glu Ser Phe Leu	Ser Arg Phe Pro	Ser Lys Thr	
1375	1380	1385		
tta ggt att gtc	tct tta aat tgt	gga ttt cat gct	cgt gca ttg	4787
Leu Gly Ile Val	Ser Leu Asn Cys	Gly Phe His Ala	Arg Ala Leu	
1390	1395	1400		

ttt tat tgg gag caa cac ata cgt aat gct aca gct cca tat gca	4832
Phe Tyr Trp Glu Gln His Ile Arg Asn Ala Thr Ala Pro Tyr Ala	
1405 1410 1415	
gct tta gag tcc gat tat aga gtt ttg cag gaa ata tat gct gga	4877
Ala Leu Glu Ser Asp Tyr Arg Val Leu Gln Glu Ile Tyr Ala Gly	
1420 1425 1430	
att gat gat cca gat gaa atc gaa gca gtg tct tta aat ttc cat	4922
Ile Asp Asp Pro Asp Glu Ile Glu Ala Val Ser Leu Asn Phe His	
1435 1440 1445	
gat tac tcg ttt gat caa caa ctc ctt tta cat gaa aat tca gga	4967
Asp Tyr Ser Phe Asp Gln Gln Leu Leu Leu His Glu Asn Ser Gly	
1450 1455 1460	
aca tgg gac tcg gct ttg agt tgt tac gaa att att att caa aag	5012
Thr Trp Asp Ser Ala Leu Ser Cys Tyr Glu Ile Ile Ile Gln Lys	
1465 1470 1475	
gat cct gaa aat aaa aag gcg aaa atc ggt ttg ctt aac agc atg	5057
Asp Pro Glu Asn Lys Lys Ala Lys Ile Gly Leu Leu Asn Ser Met	
1480 1485 1490	
ctg caa tcg ggg cat tat gaa tct ctt gtt ttg agt tta gat tct	5102
Leu Gln Ser Gly His Tyr Glu Ser Leu Val Leu Ser Leu Asp Ser	
1495 1500 1505	
ttt ata atc aat gac aac cac gag tat tcg aag atg tta aat ttg	5147
Phe Ile Ile Asn Asp Asn His Glu Tyr Ser Lys Met Leu Asn Leu	
1510 1515 1520	
ggt att gaa gct tca tgg cgt tcg cta tct att gat tcg tta aaa	5192
Gly Ile Glu Ala Ser Trp Arg Ser Leu Ser Ile Asp Ser Leu Lys	
1525 1530 1535	
aag tgt ctt tca aaa agc aac ttg gaa tct ttc gaa gct aaa ttg	5237
Lys Cys Leu Ser Lys Ser Asn Leu Glu Ser Phe Glu Ala Lys Leu	
1540 1545 1550	
ggt agc ata ttt tac caa tac cta cgg aag gat tct ttt gct gaa	5282
Gly Ser Ile Phe Tyr Gln Tyr Leu Arg Lys Asp Ser Phe Ala Glu	
1555 1560 1565	
ttg acg gag cgg ctg caa ccc ttg tac gtt gat gct gct aca gca	5327
Leu Thr Glu Arg Leu Gln Pro Leu Tyr Val Asp Ala Ala Thr Ala	
1570 1575 1580	
att gca aac aca ggc gcc cat tca gcc tat gat tgt tat gat att	5372
Ile Ala Asn Thr Gly Ala His Ser Ala Tyr Asp Cys Tyr Asp Ile	
1585 1590 1595	
tta tct aag ctg cac gca att aat gac ttt agt agg att gct gaa	5417
Leu Ser Lys Leu His Ala Ile Asn Asp Phe Ser Arg Ile Ala Glu	
1600 1605 1610	
act gac gga att gtt tcc gac aat ctt gat att gtt ctt cgc cgt	5462
Thr Asp Gly Ile Val Ser Asp Asn Leu Asp Ile Val Leu Arg Arg	
1615 1620 1625	
cgg ctt agc caa gta gct ccg tac ggt aaa ttc aag cac caa atc	5507
Arg Leu Ser Gln Val Ala Pro Tyr Gly Lys Phe Lys His Gln Ile	
1630 1635 1640	
ctg tcc act cac tta gtt ggc tat gaa aaa ttt gaa aac acg aag	5552
Leu Ser Thr His Leu Val Gly Tyr Glu Lys Phe Glu Asn Thr Lys	
1645 1650 1655	
aaa act gct gaa ata tat ctc gag att gca aga ata tct cga aaa	5597
Lys Thr Ala Glu Ile Tyr Leu Glu Ile Ala Arg Ile Ser Arg Lys	
1660 1665 1670	
aat ggt caa ttt caa aga gcc ttc aat gcc atc ctc aaa gca atg	5642
Asn Gly Gln Phe Gln Arg Ala Phe Asn Ala Ile Leu Lys Ala Met	
1675 1680 1685	
gat tta gat aaa ccg cta gca aca ata gag cac gca caa tgg tgg	5687
Asp Leu Asp Lys Pro Leu Ala Thr Ile Glu His Ala Gln Trp Trp	
1690 1695 1700	
tgg cat caa ggg caa cat cgt aaa gct att tct gaa ttg aat ttt	5732
Trp His Gln Gly Gln His Arg Lys Ala Ile Ser Glu Leu Asn Phe	
1705 1710 1715	

tcg ctt aat aac aac atg ttt gat ttg gtt gat gag cat gaa gaa	5777
Ser Leu Asn Asn Asn Met Phe Asp Leu Val Asp Glu His Glu Glu	
1720 1725 1730	
aga cct aaa aat cgt aaa gaa act tta gga aat cca ctt aaa gga	5822
Arg Pro Lys Asn Arg Lys Glu Thr Leu Gly Asn Pro Leu Lys Gly	
1735 1740 1745	
aaa gtg ttc ttg aaa ctt aca aaa tgg ctc gga aaa gct ggc caa	5867
Lys Val Phe Leu Lys Leu Thr Lys Trp Leu Gly Lys Ala Gly Gln	
1750 1755 1760	
ctg gga ttg aag gat ttg gag acg tat tat cat aaa gcg gta gag	5912
Leu Gly Leu Lys Asp Leu Glu Thr Tyr Tyr His Lys Ala Val Glu	
1765 1770 1775	
att tac tca gaa tgt gag aat acg cat tat tat ctt ggc cat cat	5957
Ile Tyr Ser Glu Cys Glu Asn Thr His Tyr Tyr Leu Gly His His	
1780 1785 1790	
cga gtt tta atg tat gaa gaa gaa caa aag ctc cca gtt aat gaa	6002
Arg Val Leu Met Tyr Glu Glu Glu Gln Lys Leu Pro Val Asn Glu	
1795 1800 1805	
cag agc gaa cga ttt tta agt ggt gag tta gta act cgc ata att	6047
Gln Ser Glu Arg Phe Leu Ser Gly Glu Leu Val Thr Arg Ile Ile	
1810 1815 1820	
aac gaa ttt ggt cga tct ttg tac tat ggt aca aat cat ata tat	6092
Asn Glu Phe Gly Arg Ser Leu Tyr Tyr Gly Thr Asn His Ile Tyr	
1825 1830 1835	
gaa agt atg cca aaa ttg ctc aca ctg tgg ctt gat ttt ggc gcc	6137
Glu Ser Met Pro Lys Leu Leu Thr Leu Trp Leu Asp Phe Gly Ala	
1840 1845 1850	
gaa gaa ctt cgc tta tct aaa gat gac ggc gaa aag tac ttt cgt	6182
Glu Glu Leu Arg Leu Ser Lys Asp Asp Gly Glu Lys Tyr Phe Arg	
1855 1860 1865	
gaa cac att atc tct tcg aga aaa tct ttg gaa ctt atg aat	6227
Glu His Ile Ile Ser Ser Arg Lys Lys Ser Leu Glu Leu Met Asn	
1870 1875 1880	
tcg aat gtt tgt cgc ctt tct atg aaa att cct caa tac ttt ttt	6272
Ser Asn Val Cys Arg Leu Ser Met Lys Ile Pro Gln Tyr Phe Phe	
1885 1890 1895	
ctg gtt gca tta tcc caa atg ata tcc aga gta tgc cat cca aat	6317
Leu Val Ala Leu Ser Gln Met Ile Ser Arg Val Cys His Pro Asn	
1900 1905 1910	
aat aaa gtt tat aaa att ttg gaa cat ata att gca aac gtt gta	6362
Asn Lys Val Tyr Lys Ile Leu Glu His Ile Ile Ala Asn Val Val	
1915 1920 1925	
gca tct tat cct ggg gag acg cta tgg caa tta atg gca aca ata	6407
Ala Ser Tyr Pro Gly Glu Thr Leu Trp Gln Leu Met Ala Thr Ile	
1930 1935 1940	
aaa tcg act tct caa aag cgc tcg ctt cgt gga aaa agc att tta	6452
Lys Ser Thr Ser Gln Lys Arg Ser Leu Arg Gly Lys Ser Ile Leu	
1945 1950 1955	
aat gtt tta cat tct agg aag ctt tct atg tct tcc aaa gtt gat	6497
Asn Val Leu His Ser Arg Lys Leu Ser Met Ser Ser Lys Val Asp	
1960 1965 1970	
ata aaa gca ctc agt caa tct gca att ctc att act gaa aag tta	6542
Ile Lys Ala Leu Ser Gln Ser Ala Ile Leu Ile Thr Glu Lys Leu	
1975 1980 1985	
atc aat ttg tgc aat aca agg att aac agt aaa tct gta aaa atg	6587
Ile Asn Leu Cys Asn Thr Arg Ile Asn Ser Lys Ser Val Lys Met	
1990 1995 2000	
agc tta aag gat cat ttt cgg ctt tct ttt gat gat ccg gta gat	6632
Ser Leu Lys Asp His Phe Arg Leu Ser Phe Asp Asp Pro Val Asp	
2005 2010 2015	
tta gtc att cct gct aaa tca ttt tta gac att act tta cca gct	6677
Leu Val Ile Pro Ala Lys Ser Phe Leu Asp Ile Thr Leu Pro Ala	
2020 2025 2030	

aaa gat gct aac	aga gct agt cat	tat cca ttt cca	aaa act cag	6722
Lys Asp Ala Asn	Arg Ala Ser His	Tyr Pro Phe Pro	Lys Thr Gln	
2035		2040	2045	
cct act ctg ttg	aaa ttt gag gat	gag gtg gat ata	atg aac tct	6767
Pro Thr Leu Leu	Lys Phe Glu Asp	Glu Val Asp Ile	Met Asn Ser	
2050		2055	2060	
ctt caa aaa cca	aga aaa gtg tac	ggt acg gat ggc	aac aac	6812
Leu Gln Lys Pro	Arg Lys Val Tyr	Val Arg Gly Thr	Asp Gly Asn	
2065		2070	2075	
tta tac cca ttc	ttg tgc aaa ccc	aaa gat gat ctt	cgt aag gat	6857
Leu Tyr Pro Phe	Leu Cys Lys Pro	Lys Asp Asp Leu	Arg Lys Asp	
2080		2085	2090	
gct aga ttg atg	gaa ttt aat aat	ctt att tgt aaa	ata ttg agg	6902
Ala Arg Leu Met	Glu Phe Asn Asn	Leu Ile Cys Lys	Ile Leu Arg	
2095		2100	2105	
aaa gat caa gaa	gcg aac aga agg	aac ttg tgt att	aga act tat	6947
Lys Asp Gln Glu	Ala Asn Arg Arg	Asn Leu Cys Ile	Arg Thr Tyr	
2110		2115	2120	
gtt gtt att cct	tta aat gaa gaa	tgc gga ttt atc	gaa tgg gta	6992
Val Val Ile Pro	Leu Asn Glu Glu	Cys Gly Phe Ile	Glu Trp Val	
2125		2130	2135	
aat cat act cgt	cca ttt aga gaa	att ttg tta aaa	agc tat aga	7037
Asn His Thr Arg	Pro Phe Arg Glu	Ile Leu Leu Lys	Ser Tyr Arg	
2140		2145	2150	
cag aaa aac att	ccc ata tca tat	caa gaa atc aaa	gtt gat tta	7082
Gln Lys Asn Ile	Pro Ile Ser Tyr	Gln Glu Ile Lys	Val Asp Leu	
2155		2160	2165	
gac ttt gca ctg	cga agt cct aac	cct ggt gat ata	ttt gaa aag	7127
Asp Phe Ala Leu	Arg Ser Pro Asn	Pro Gly Asp Ile	Phe Glu Lys	
2170		2175	2180	
aaa atc tta ccg	aaa ttt cct cca	gtt ttt tat gag	tgg ttt gtt	7172
Lys Ile Leu Pro	Lys Phe Pro Pro	Val Phe Tyr Glu	Trp Phe Val	
2185		2190	2195	
gaa tct ttc cca	gaa cca aat aat	tgg gtt act agt	aga caa aac	7217
Glu Ser Phe Pro	Glu Pro Asn Asn	Trp Val Thr Ser	Arg Gln Asn	
2200		2205	2210	
tat tgc cga act	tta gca gta atg	tca ata gtt ggc	tac gtt ttg	7262
Tyr Cys Arg Thr	Leu Ala Val Met	Ser Ile Val Gly	Tyr Val Leu	
2215		2220	2225	
ggt ttg gga gat	cgc cat ggc gaa	aac ata ttg ttt	gat gaa ttt	7307
Gly Leu Gly Asp	Arg His Gly Glu	Asn Ile Leu Phe	Asp Glu Phe	
2230		2235	2240	
aca ggt gaa gct	atc cat gtc gat	ttc aac tgt ctt	ttt gat aaa	7352
Thr Gly Glu Ala	Ile His Val Asp	Phe Asn Cys Leu	Phe Asp Lys	
2245		2250	2255	
ggt ctt act ttt	gaa aaa cct gaa	aag gtg ccg ttc	aga tta act	7397
Gly Leu Thr Phe	Glu Lys Pro Glu	Lys Val Pro Phe	Arg Leu Thr	
2260		2265	2270	
cat aat atg gta	gat gca atg ggt	ccg aca ggt tat	gaa ggg ggt	7442
His Asn Met Val	Asp Ala Met Gly	Pro Thr Gly Tyr	Glu Gly Gly	
2275		2280	2285	
ttc agg aaa gct	agc gaa ata acg	atg cgg ctt ctt	cgc tca aac	7487
Phe Arg Lys Ala	Ser Glu Ile Thr	Met Arg Leu Leu	Arg Ser Asn	
2290		2295	2300	
caa gat aca ttg	atg agc gta cta	gag tct ttc cta	cat gat cct	7532
Gln Asp Thr Leu	Met Ser Val Leu	Glu Ser Phe Leu	His Asp Pro	
2305		2310	2315	
tta gtc gag tgg	aat aga aag aag	tcg tca agc aag	tac ccg aat	7577
Leu Val Glu Trp	Asn Arg Lys Lys	Ser Ser Ser Lys	Tyr Pro Asn	
2320		2325	2330	
aat gaa gca aat	gaa gtt ttg gat	ata att cgc aaa	aaa ttt caa	7622
Asn Glu Ala Asn	Glu Val Leu Asp	Ile Ile Arg Lys	Lys Phe Gln	
2335		2340	2345	

ggc ttt atg cca ggg gag acg ata cct tta tct att gaa ggg caa	7667
Gly Phe Met Pro Gly Glu Thr Ile Pro Leu Ser Ile Glu Gly Gln	
2350 2355 2360	
att caa gaa ttg atc aaa tct gct gtc aac cca aaa aac ctg gta	7712
Ile Gln Glu Leu Ile Lys Ser Ala Val Asn Pro Lys Asn Leu Val	
2365 2370 2375	
gaa atg tac att ggt tgg gct gct tat ttc tagcatttta ctaacaaaaa	7762
Glu Met Tyr Ile Gly Trp Ala Ala Tyr Phe	
2380 2385	
tttcaatgaa caagctaccc attattaaac ttatgatttg aatcgaagat attttatttta	7822
ttaatccgat gaagaattct cgctgagttg ttcaattttct tgtaattttc cttccatttc	7882
taaatcgctg attcgcttaa atagggcact ggctttttgt gcattttttct ctcgtaaagc	7942
agctttctgat tgaaaaaaag ctatatctgt ttctgagtca tcatccgaat caacaatata	8002
ttttgcagat cgacctgcag	8022

<210> 4
 <211> 2386
 <212> PRT
 <213> Homo sapiens

<400> 4

Met Ser Gln His Ala Lys Arg Lys Ala Gly Ser Leu Asp Leu Ser Pro	
1 5 10 15	
Arg Gly Leu Asp Asp Arg Gln Ala Phe Gly Gln Leu Leu Lys Glu Val	
20 25 30	
Leu Ala Leu Asp Lys Glu His Glu Leu Gly Arg Ser Asn Ser Leu Pro	
35 40 45	
Ser Met Thr Ser Glu Leu Val Glu Val Leu Ile Glu Val Gly Leu Leu	
50 55 60	
Ala Phe Lys His Asp Asp Ser Lys Ser Glu Phe Ile Ser Pro Lys Met	
65 70 75 80	
Leu Lys Glu Ala His Leu Ser Leu Gln Ala Leu Met Leu Ile Leu Lys	
85 90 95	
Arg Ser Pro Thr Val Leu Arg Glu Ile Lys Ser Ser Val Thr Leu Leu	
100 105 110	
Asp Trp Ile Leu Pro Arg Thr Ile Ser Leu Phe Ala Asp Ile Arg Phe	
115 120 125	
Ile Lys Leu Phe Asp Ser Leu Lys Glu Phe His Lys Leu Ile Tyr Gln	
130 135 140	
Leu Ile Ser Glu Lys Ser Phe Leu Trp Asp Leu Tyr Ala Ser Phe Met	
145 150 155 160	
Arg Tyr Trp Lys Tyr Tyr Ile Thr Asn Val Ser Ser Ile Val Leu Gln	
165 170 175	
Ile Thr Asn Ala Thr Phe Pro Tyr Lys Met Pro Ser Pro Asn Ser Gln	
180 185 190	
Pro Leu Gln Ser Ile Ser Pro Asn Tyr Pro Thr His Arg Glu Asp Lys	
195 200 205	
Phe Asp Leu Leu Ile Ile Asn Ile Glu Glu Ala Cys Thr Phe Phe Phe	
210 215 220	
Glu Ser Ala His Phe Phe Ala Gln Cys Ser Tyr Leu Lys Lys Ser Asn	
225 230 235 240	
Phe Pro Ser Pro Pro Leu Phe Thr Ala Trp Thr Trp Ile Lys Pro Cys	
245 250 255	
Phe Phe Asn Phe Val Ile Leu Leu Lys Arg Ile Ser Ile Gly Asp Ser	
260 265 270	
Gln Leu Phe Leu His Leu His Ser Arg Ile Val Gln Thr Leu Cys Cys	
275 280 285	
Phe Ser Leu Asn Phe Ile Tyr His Gly Leu Pro Ile Cys Glu Lys Ser	
290 295 300	
Lys His Ile Leu Met Ser Ser Ile Asn Leu Thr Leu Gly Ser Leu Lys	
305 310 315 320	

Lys	Thr	Tyr	Thr	Val	Ala	Asn	Thr	Ala	Ile	Ser	Leu	Phe	Phe	Leu	Ser	325	330	335
Leu	Phe	Val	Leu	Pro	Lys	Thr	Val	Ala	Gly	Leu	Phe	Tyr	Pro	Phe	Gly	340	345	350
Val	Ser	Leu	Leu	Ser	Asp	Phe	Lys	Val	Leu	Glu	Gln	Leu	Glu	Pro	Asp	355	360	365
Ser	Asp	Leu	Lys	Lys	Ala	Ile	Ile	Leu	Phe	Lys	Cys	Arg	Tyr	Gln	Ser	370	375	380
Ser	Glu	Ile	Asp	Gln	Thr	Thr	Leu	Arg	Ala	Phe	Gly	Glu	Ile	Cys	Thr	385	390	395
Gly	Lys	Leu	Glu	Asn	Thr	Leu	Phe	Ser	Asn	Ser	Glu	Leu	Asn	Leu	Phe	405	410	415
Leu	Leu	His	Tyr	Leu	Ser	Leu	Asp	Asn	Asp	Leu	Ser	Asn	Ile	Leu	Lys	420	425	430
Val	Asp	Phe	Gln	Asn	Gly	His	Asn	Ile	Cys	Thr	Phe	Ala	Lys	Trp	Cys	435	440	445
Ile	Asn	Asn	Asn	Leu	Asp	Glu	Pro	Ser	Asn	Leu	Lys	His	Phe	Arg	Glu	450	455	460
Met	Leu	Asp	Tyr	Tyr	Ser	Ser	His	Asn	Val	Thr	Ile	Ser	Glu	Asp	Asp	465	470	475
Leu	Lys	Asn	Phe	Ser	Leu	Val	Leu	Cys	Thr	His	Val	Ala	Lys	Val	Asn	485	490	495
Glu	Lys	Thr	Asn	Ser	Ile	Phe	Arg	Thr	Tyr	Glu	Val	His	Gly	Cys	Glu	500	505	510
Val	Cys	Asn	Ser	Phe	Cys	Leu	Leu	Phe	Asp	Glu	Arg	Ser	Pro	Phe	Lys	515	520	525
Ile	Pro	Tyr	His	Glu	Leu	Phe	Cys	Ala	Leu	Leu	Lys	Asn	Pro	Asp	Ile	530	535	540
Ile	Ser	Ser	Ser	Val	Lys	Gln	Ser	Leu	Leu	Leu	Asp	Gly	Phe	Phe	Arg	545	550	555
Trp	Ser	Gln	His	Cys	Ser	Asn	Phe	Asn	Lys	Glu	Ser	Met	Leu	Ser	Leu	565	570	575
Arg	Glu	Phe	Ile	Met	Lys	Ala	Leu	Ala	Ser	Thr	Ser	Arg	Cys	Leu	Arg	580	585	590
Val	Val	Ala	Ala	Lys	Val	Leu	Pro	Ile	Phe	Ile	Lys	Gly	Pro	Asn	Asn	595	600	605
Leu	Asp	Ile	Val	Glu	Phe	His	Lys	Glu	Ser	Lys	Ala	Leu	Ile	Phe	Asn	610	615	620
Thr	Leu	Lys	Ile	Leu	Ala	Val	Glu	Asn	Thr	Ala	Ile	Leu	Glu	Thr	Val	625	630	635
Ile	Leu	Ser	Trp	Ile	Ser	Leu	Ser	Arg	Val	Val	Glu	Glu	Glu	Glu	Leu	645	650	655
His	Phe	Val	Leu	Glu	Val	Ile	Ser	Ser	Val	Ile	Asn	Ser	Gly	Ile		660	665	670
Phe	Tyr	Gln	Gly	Ile	Gly	Leu	Ser	Ala	Leu	Gln	Gln	Ile	Ala	Ser	Thr	675	680	685
Arg	His	Ile	Ser	Val	Trp	Gln	Leu	Leu	Ser	Pro	Tyr	Trp	Pro	Thr	Val	690	695	700
Ser	Val	Ala	Ile	Val	Gln	Gly	Met	Gly	Lys	Lys	Pro	Asn	Ile	Ala	Ser	705	710	715
Leu	Phe	Ala	Gln	Leu	Met	Asn	Ile	Ser	Glu	Gly	Asp	Phe	Leu	Ile	Arg	725	730	735
Thr	Gln	Ala	Tyr	Thr	Leu	Pro	Phe	Leu	Val	Leu	Thr	Lys	Asn	Lys	Ala	740	745	750
Leu	Ile	Val	Arg	Ile	Ala	Glu	Leu	Ser	Gln	Ser	Asp	Val	Ala	Thr	Leu	755	760	765
Cys	Leu	Thr	Asn	Met	His	Lys	Ile	Leu	Ala	Ser	Leu	Leu	Thr	Thr	Asp	770	775	780
His	Pro	Asn	Leu	Glu	Glu	Ser	Val	Met	Leu	Leu	Ser	Leu	Ala	Thr		785	790	795
Ser	Asp	Phe	Glu	Lys	Val	Asp	Leu	Thr	Ser	Leu	Leu	Arg	Ser	Asp	Pro	805	810	815

Ile	Ser	Ile	Thr	Val	Glu	Leu	Leu	Gln	Leu	Tyr	Gln	Asn	Asp	Val	Pro	820	825	830
His	Glu	Lys	Ile	Glu	Asn	Ala	Leu	Arg	Lys	Val	Ala	Met	Ile	Val	Ser	835	840	845
Gln	Val	Val	Asn	Asp	Glu	Asp	Leu	Ser	Asn	Lys	Glu	Leu	Leu	Tyr	Asp	850	855	860
Phe	Phe	Asn	Asn	His	Ile	Leu	Gly	Ile	Leu	Ala	Glu	Phe	Ser	Asn	Ile	865	870	875
Leu	Asn	Asp	Leu	Lys	Gly	Lys	Thr	Ser	Ile	Asn	Glu	Lys	Ile	Lys	Thr	885	890	895
Ile	Val	Gly	Ile	Glu	Lys	Met	Leu	Ser	Leu	Cys	Gly	Gly	Ala	Val	Lys	900	905	910
Leu	Gly	Leu	Pro	Gln	Ile	Leu	Ser	Asn	Leu	Gln	Ser	Ala	Phe	Gln	Asn	915	920	925
Glu	His	Leu	Arg	Phe	Tyr	Ala	Ile	Lys	Ala	Trp	Phe	Ser	Leu	Ile	Leu	930	935	940
Ala	Thr	Lys	Glu	Pro	Glu	Tyr	Ser	Ser	Ile	Ala	Gly	Leu	Ser	Leu	Val	945	950	955
Ile	Leu	Pro	Pro	Leu	Phe	Pro	Tyr	Leu	Glu	Pro	Gln	Glu	Ala	Glu	Leu	965	970	975
Val	Ile	Gln	Ile	Phe	Asp	Phe	Ile	Ser	Ser	Asp	Thr	His	Lys	Cys	Leu	980	985	990
Gln	Gly	Leu	Lys	Trp	Ala	Ile	Pro	Thr	Ser	Leu	Asp	Ser	Ala	Cys	Phe	995	1000	1005
Ser	Leu	Lys	Ala	Lys	Glu	Ile	Phe	Cys	Ser	Leu	Gln	Asn	Glu	Asp		1010	1015	1020
Phe	Tyr	Ser	Glu	Leu	Gln	Ser	Ile	Ile	Lys	Cys	Leu	Thr	Asn	Glu		1025	1030	1035
Asn	Glu	Pro	Val	Cys	Tyr	Leu	Gly	Leu	Gln	Lys	Leu	Glu	Leu	Phe		1040	1045	1050
Phe	Gln	Ala	Lys	Val	Asp	Glu	Leu	His	Asp	Thr	Leu	Asn	Leu	Asp		1055	1060	1065
Ile	Ser	Asn	Glu	Val	Leu	Asp	Gln	Leu	Leu	Arg	Cys	Leu	Leu	Asp		1070	1075	1080
Cys	Cys	Val	Lys	Tyr	Ala	Ser	Thr	Asn	Met	Gln	Ile	Ser	Tyr	Leu		1085	1090	1095
Ala	Ala	Lys	Asn	Leu	Gly	Glu	Leu	Gly	Ala	Ile	Asp	Pro	Ser	Arg		1100	1105	1110
Ala	Lys	Ala	Gln	His	Ile	Ile	Lys	Glu	Thr	Val	Val	Leu	Asp	Asn		1115	1120	1125
Phe	Glu	Asn	Gly	Glu	Glu	Ser	Leu	Lys	Phe	Ile	Leu	Asp	Phe	Met		1130	1135	1140
Gln	Ser	Gln	Leu	Ile	Pro	Ala	Phe	Leu	Val	Thr	Thr	Asp	Thr	Lys		1145	1150	1155
Ala	Gln	Gly	Phe	Leu	Ala	Tyr	Ala	Leu	Gln	Glu	Phe	Leu	Lys	Leu		1160	1165	1170
Gly	Gly	Phe	Lys	Ser	Ala	Val	Ile	Asn	Lys	Lys	Lys	Gly	Leu	Thr		1175	1180	1185
Val	Val	Thr	Glu	His	Trp	Met	Ser	Leu	Pro	Asp	Leu	Ser	Lys	Arg		1190	1195	1200
Val	Leu	Ile	Pro	Phe	Leu	Thr	Ser	Lys	Tyr	His	Leu	Thr	Pro	Ile		1205	1210	1215
Pro	Lys	Ile	Asp	Ile	Arg	Tyr	Pro	Ile	Tyr	Lys	Glu	Asn	Val	Thr		1220	1225	1230
Ile	His	Thr	Trp	Met	Gln	Leu	Phe	Ser	Leu	Lys	Leu	Met	Glu	Tyr		1235	1240	1245
Ala	His	Ser	Gln	Asn	Ala	Glu	Lys	Ile	Phe	Gly	Ile	Cys	Ser	Lys		1250	1255	1260
Val	Val	Lys	Asp	Gln	Glu	Val	Asn	Ile	Pro	Cys	Phe	Leu	Leu	Pro		1265	1270	1275
Phe	Leu	Val	Leu	Asn	Val	Ile	Leu	Thr	Glu	Ser	Glu	Leu	Glu	Val		1280	1285	1290

Asn	Lys	Val	Ile	Glu	Glu	Phe	Gln	Leu	Val	Ile	Asn	Gln	Pro	Gly
1295						1300					1305			
Pro	Asp	Gly	Leu	Asn	Ser	Val	Gly	Gln	Gln	Arg	Tyr	Thr	Ser	Phe
1310						1315					1320			
Val	Asp	Val	Phe	Phe	Lys	Ile	Val	Asp	Tyr	Leu	Asn	Lys	Trp	Leu
1325						1330					1335			
Arg	Met	Arg	Lys	Lys	Arg	Asn	Trp	Asp	Arg	Arg	Ser	Ala	Ile	Ala
1340						1345					1350			
Arg	Lys	Glu	Asn	Arg	Tyr	Met	Ser	Val	Glu	Asp	Ala	Thr	Ser	Arg
1355						1360					1365			
Glu	Ser	Ser	Ile	Ser	Lys	Val	Glu	Ser	Phe	Leu	Ser	Arg	Phe	Pro
1370						1375					1380			
Ser	Lys	Thr	Leu	Gly	Ile	Val	Ser	Leu	Asn	Cys	Gly	Phe	His	Ala
1385						1390					1395			
Arg	Ala	Leu	Phe	Tyr	Trp	Glu	Gln	His	Ile	Arg	Asn	Ala	Thr	Ala
1400						1405					1410			
Pro	Tyr	Ala	Ala	Leu	Glu	Ser	Asp	Tyr	Arg	Val	Leu	Gln	Glu	Ile
1415						1420					1425			
Tyr	Ala	Gly	Ile	Asp	Asp	Pro	Asp	Glu	Ile	Glu	Ala	Val	Ser	Leu
1430						1435					1440			
Asn	Phe	His	Asp	Tyr	Ser	Phe	Asp	Gln	Gln	Leu	Leu	Leu	His	Glu
1445						1450					1455			
Asn	Ser	Gly	Thr	Trp	Asp	Ser	Ala	Leu	Ser	Cys	Tyr	Glu	Ile	Ile
1460						1465					1470			
Ile	Gln	Lys	Asp	Pro	Glu	Asn	Lys	Lys	Ala	Lys	Ile	Gly	Leu	Leu
1475						1480					1485			
Asn	Ser	Met	Leu	Gln	Ser	Gly	His	Tyr	Glu	Ser	Leu	Val	Leu	Ser
1490						1495					1500			
Leu	Asp	Ser	Phe	Ile	Ile	Asn	Asp	Asn	His	Glu	Tyr	Ser	Lys	Met
1505						1510					1515			
Leu	Asn	Leu	Gly	Ile	Glu	Ala	Ser	Trp	Arg	Ser	Leu	Ser	Ile	Asp
1520						1525					1530			
Ser	Leu	Lys	Lys	Cys	Leu	Ser	Lys	Ser	Asn	Leu	Glu	Ser	Phe	Glu
1535						1540					1545			
Ala	Lys	Leu	Gly	Ser	Ile	Phe	Tyr	Gln	Tyr	Leu	Arg	Lys	Asp	Ser
1550						1555					1560			
Phe	Ala	Glu	Leu	Thr	Glu	Arg	Leu	Gln	Pro	Leu	Tyr	Val	Asp	Ala
1565						1570					1575			
Ala	Thr	Ala	Ile	Ala	Asn	Thr	Gly	Ala	His	Ser	Ala	Tyr	Asp	Cys
1580						1585					1590			
Tyr	Asp	Ile	Leu	Ser	Lys	Leu	His	Ala	Ile	Asn	Asp	Phe	Ser	Arg
1595						1600					1605			
Ile	Ala	Glu	Thr	Asp	Gly	Ile	Val	Ser	Asp	Asn	Leu	Asp	Ile	Val
1610						1615					1620			
Leu	Arg	Arg	Arg	Leu	Ser	Gln	Val	Ala	Pro	Tyr	Gly	Lys	Phe	Lys
1625						1630					1635			
His	Gln	Ile	Leu	Ser	Thr	His	Leu	Val	Gly	Tyr	Glu	Lys	Phe	Glu
1640						1645					1650			
Asn	Thr	Lys	Lys	Thr	Ala	Glu	Ile	Tyr	Leu	Glu	Ile	Ala	Arg	Ile
1655						1660					1665			
Ser	Arg	Lys	Asn	Gly	Gln	Phe	Gln	Arg	Ala	Phe	Asn	Ala	Ile	Leu
1670						1675					1680			
Lys	Ala	Met	Asp	Leu	Asp	Lys	Pro	Leu	Ala	Thr	Ile	Glu	His	Ala
1685						1690					1695			
Gln	Trp	Trp	Trp	His	Gln	Gly	Gln	His	Arg	Lys	Ala	Ile	Ser	Glu
1700						1705					1710			
Leu	Asn	Phe	Ser	Leu	Asn	Asn	Asn	Met	Phe	Asp	Leu	Val	Asp	Glu
1715						1720					1725			
His	Glu	Glu	Arg	Pro	Lys	Asn	Arg	Lys	Glu	Thr	Leu	Gly	Asn	Pro
1730						1735					1740			
Leu	Lys	Gly	Lys	Val	Phe	Leu	Lys	Leu	Thr	Lys	Trp	Leu	Gly	Lys
1745						1750					1755			

Ala	Gly	Gln	Leu	Gly	Leu	Lys	Asp	Leu	Glu	Thr	Tyr	Tyr	His	Lys
1760						1765					1770			
Ala	Val	Glu	Ile	Tyr	Ser	Glu	Cys	Glu	Asn	Thr	His	Tyr	Tyr	Leu
1775						1780					1785			
Gly	His	His	Arg	Val	Leu	Met	Tyr	Glu	Glu	Glu	Gln	Lys	Leu	Pro
1790						1795					1800			
Val	Asn	Glu	Gln	Ser	Glu	Arg	Phe	Leu	Ser	Gly	Glu	Leu	Val	Thr
1805						1810					1815			
Arg	Ile	Ile	Asn	Glu	Phe	Gly	Arg	Ser	Leu	Tyr	Tyr	Gly	Thr	Asn
1820						1825					1830			
His	Ile	Tyr	Glu	Ser	Met	Pro	Lys	Leu	Leu	Thr	Leu	Trp	Leu	Asp
1835						1840					1845			
Phe	Gly	Ala	Glu	Glu	Leu	Arg	Leu	Ser	Lys	Asp	Asp	Gly	Glu	Lys
1850						1855					1860			
Tyr	Phe	Arg	Glu	His	Ile	Ile	Ser	Ser	Arg	Lys	Lys	Ser	Leu	Glu
1865						1870					1875			
Leu	Met	Asn	Ser	Asn	Val	Cys	Arg	Leu	Ser	Met	Lys	Ile	Pro	Gln
1880						1885					1890			
Tyr	Phe	Phe	Leu	Val	Ala	Leu	Ser	Gln	Met	Ile	Ser	Arg	Val	Cys
1895						1900					1905			
His	Pro	Asn	Asn	Lys	Val	Tyr	Lys	Ile	Leu	Glu	His	Ile	Ile	Ala
1910						1915					1920			
Asn	Val	Val	Ala	Ser	Tyr	Pro	Gly	Glu	Thr	Leu	Trp	Gln	Leu	Met
1925						1930					1935			
Ala	Thr	Ile	Lys	Ser	Thr	Ser	Gln	Lys	Arg	Ser	Leu	Arg	Gly	Lys
1940						1945					1950			
Ser	Ile	Leu	Asn	Val	Leu	His	Ser	Arg	Lys	Leu	Ser	Met	Ser	Ser
1955						1960					1965			
Lys	Val	Asp	Ile	Lys	Ala	Leu	Ser	Gln	Ser	Ala	Ile	Leu	Ile	Thr
1970						1975					1980			
Glu	Lys	Leu	Ile	Asn	Leu	Cys	Asn	Thr	Arg	Ile	Asn	Ser	Lys	Ser
1985						1990					1995			
Val	Lys	Met	Ser	Leu	Lys	Asp	His	Phe	Arg	Leu	Ser	Phe	Asp	Asp
2000						2005					2010			
Pro	Val	Asp	Leu	Val	Ile	Pro	Ala	Lys	Ser	Phe	Leu	Asp	Ile	Thr
2015						2020					2025			
Leu	Pro	Ala	Lys	Asp	Ala	Asn	Arg	Ala	Ser	His	Tyr	Pro	Phe	Pro
2030						2035					2040			
Lys	Thr	Gln	Pro	Thr	Leu	Leu	Lys	Phe	Glu	Asp	Glu	Val	Asp	Ile
2045						2050					2055			
Met	Asn	Ser	Leu	Gln	Lys	Pro	Arg	Lys	Val	Tyr	Val	Arg	Gly	Thr
2060						2065					2070			
Asp	Gly	Asn	Leu	Tyr	Pro	Phe	Leu	Cys	Lys	Pro	Lys	Asp	Asp	Leu
2075						2080					2085			
Arg	Lys	Asp	Ala	Arg	Leu	Met	Glu	Phe	Asn	Asn	Leu	Ile	Cys	Lys
2090						2095					2100			
Ile	Leu	Arg	Lys	Asp	Gln	Glu	Ala	Asn	Arg	Arg	Asn	Leu	Cys	Ile
2105						2110					2115			
Arg	Thr	Tyr	Val	Val	Ile	Pro	Leu	Asn	Glu	Glu	Cys	Gly	Phe	Ile
2120						2125					2130			
Glu	Trp	Val	Asn	His	Thr	Arg	Pro	Phe	Arg	Glu	Ile	Leu	Leu	Lys
2135						2140					2145			
Ser	Tyr	Arg	Gln	Lys	Asn	Ile	Pro	Ile	Ser	Tyr	Gln	Glu	Ile	Lys
2150						2155					2160			
Val	Asp	Leu	Asp	Phe	Ala	Leu	Arg	Ser	Pro	Asn	Pro	Gly	Asp	Ile
2165						2170					2175			
Phe	Glu	Lys	Lys	Ile	Leu	Pro	Lys	Phe	Pro	Pro	Val	Phe	Tyr	Glu
2180						2185					2190			
Trp	Phe	Val	Glu	Ser	Phe	Pro	Glu	Pro	Asn	Asn	Trp	Val	Thr	Ser
2195						2200					2205			
Arg	Gln	Asn	Tyr	Cys	Arg	Thr	Leu	Ala	Val	Met	Ser	Ile	Val	Gly
2210						2215					2220			

Tyr	Val	Leu	Gly	Leu	Gly	Asp	Arg	His	Gly	Glu	Asn	Ile	Leu	Phe
	2225					2230					2235			
Asp	Glu	Phe	Thr	Gly	Glu	Ala	Ile	His	Val	Asp	Phe	Asn	Cys	Leu
	2240					2245					2250			
Phe	Asp	Lys	Gly	Leu	Thr	Phe	Glu	Lys	Pro	Glu	Lys	Val	Pro	Phe
	2255					2260					2265			
Arg	Leu	Thr	His	Asn	Met	Val	Asp	Ala	Met	Gly	Pro	Thr	Gly	Tyr
	2270					2275					2280			
Glu	Gly	Gly	Phe	Arg	Lys	Ala	Ser	Glu	Ile	Thr	Met	Arg	Leu	Leu
	2285					2290					2295			
Arg	Ser	Asn	Gln	Asp	Thr	Leu	Met	Ser	Val	Leu	Glu	Ser	Phe	Leu
	2300					2305					2310			
His	Asp	Pro	Leu	Val	Glu	Trp	Asn	Arg	Lys	Lys	Ser	Ser	Ser	Lys
	2315					2320					2325			
Tyr	Pro	Asn	Asn	Glu	Ala	Asn	Glu	Val	Leu	Asp	Ile	Ile	Arg	Lys
	2330					2335					2340			
Lys	Phe	Gln	Gly	Phe	Met	Pro	Gly	Glu	Thr	Ile	Pro	Leu	Ser	Ile
	2345					2350					2355			
Glu	Gly	Gln	Ile	Gln	Glu	Leu	Ile	Lys	Ser	Ala	Val	Asn	Pro	Lys
	2360					2365					2370			
Asn	Leu	Val	Glu	Met	Tyr	Ile	Gly	Trp	Ala	Ala	Tyr	Phe		
	2375					2380					2385			

<210> 5
 <211> 30
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic primer

<400> 5

gttttcgccca tggcgcgctc ccaaacccaa

30

<210> 6
 <211> 30
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic primer

<400> 6

ttcatacaaac aatatctttt cgccatggcg

30

<210> 7
 <211> 30
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Synthetic primer

<400> 7

caaaaagaca gttgaattcg acatggatag

30

<210> 8
 <211> 33
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> Synthetic primer

 <400> 8
 gacgcagaat tcaccagtca aagaatcaaa gag 33

 <210> 9
 <211> 20
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> Synthetic primer

 <400> 9
 tggatgatga cagctgtgtc 20

 <210> 10
 <211> 20
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> Synthetic primer

 <400> 10
 tgtagtcgct gctcaatgtc 20

 <210> 11
 <211> 23
 <212> DNA
 <213> Artificial sequence

 <220>
 <223> Synthetic primer

 <400> 11
 tggtttctga gaacattccc tga 23

 <210> 12
 <211> 10
 <212> PRT
 <213> Artificial sequence

 <220>
 <223> Rad3/Esrlp

 <220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> Xaa = Isoleucine or Valine

<220>
 <221> MISC_FEATURE
 <222> (6)..(6)
 <223> Xaa = Leucine or Phenylalanine

 <220>
 <221> MISC_FEATURE
 <222> (8)..(8)
 <223> Xaa = Glutamine or Glutamic Acid

 <400> 12

Lys Phe Pro Pro Xaa Xaa Tyr Xaa Trp Phe
 1 5 10

<210> 13
 <211> 7
 <212> PRT
 <213> Artificial sequence

<220>
 <223> oligonucleotide oDH18

 <400> 13

Leu Gly Leu Gly Asp Arg His
 1 5

<210> 14
 <211> 6
 <212> PRT
 <213> Artificial sequence

<220>
 <223> oligonucleotide oDH 16

<220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> Xaa = Aspartic Acid or Asparagine

 <400> 14

His Val Asp Phe Xaa Cys
 1 5